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A COMPARISON OF U.S. AND JAPANESE  
MANAGEMENT SYSTEMS AND THEIR  
TRANSFERABILITY TO SINGAPORE INDUSTRY

A thesis, submitted for consideration  
for the award of Doctor of Philosophy

by

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THE UNIVERSITY OF ASTON IN BIRMINGHAM



SUMMARY

A Comparison of U.S. and Japanese management systems  
and their transferability to Singapore industry

This research compares U.S. and Japanese management systems and evaluates their transferability to Singapore manufacturing industry. The main objectives were :-

- a) To determine the effectiveness of U.S. and Japanese management systems when applied in Singapore.
- b) To determine the extent of transferability of U.S. and Japanese management systems to Singapore.
- c) To survey general problems encountered in the application of U.S. and Japanese management systems to Singapore industry.

The study using questionnaire survey and interviews covered a total of eighty companies from four groups of firms in four industrial sectors comprising of U.S. and Japanese subsidiaries based in Singapore and their respective parent companies. Data from questionnaires and interviews were used to investigate environmental conditions, management philosophy, management functions/practices, management effectiveness, and firm productivity. Two-way analysis of variance was used to analyse the questionnaire data.

The analysis of perceptual data from the questionnaire survey and interviews suggested that both U.S. and Japanese parent companies performed better in almost all the management variables studied when compared to their subsidiaries in Singapore. U.S. subsidiaries have less difficulty in adjusting to the Singapore environmental conditions and obtained better results than Japanese subsidiaries in management functions/practices and management effectiveness. Japanese subsidiaries, however, perceived that they have better management philosophy than U.S. subsidiaries. In addition, the firm productivity (in terms of labour and capital productivity) of U.S. subsidiaries in Singapore was found to be higher than those of Japanese subsidiaries.

It was found that Japanese parent companies returned higher score than U.S. parent companies for all the four management variables (i.e. environmental conditions, management philosophy, management functions/practices, and management effectiveness) surveyed using questionnaires. In spite of this, the average score for Japanese subsidiaries were generally lower than U.S. subsidiaries. Hence, the study suggests that the transfer of U.S. management system to Singapore industry is more successful than the Japanese management system.

Finally, the difficulty of implementing Japanese management in Singapore was discussed and the research findings were validated by cross-checking with recent reports and developments in Singapore.

Transferability, U.S. and Japanese management.

Lim Teow Ek

Submitted for the consideration for the award of  
Doctor of Philosophy 1987.

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## PART 1

### INTRODUCTION

Part 1 provides an introduction to the research problem and a review of literature relating to comparative U.S. and Japanese management. It examines previous research on the topic and gives an overview of the research methodology.

The first chapter describes the research problem and the importance of the research. It then discusses the assumptions and limitations of the research.

Chapters two and three examine the previous related research and discussions on comparative management and comparative U.S. - Japanese management systems respectively. Chapter three summarizes the findings of previous related research work conducted on comparative U.S. and Japanese management systems. It includes a discussion on the predominant characteristics and origins of the Japanese management system.

The fourth chapter gives a methodological review of various models that have been developed for comparative management research. It discusses the effectiveness of the different types of approaches in comparative management research.

The fifth chapter presents the proposed methodology to be used for the research. It describes how the proposed research methodology and procedures are developed based on the methodological review of the comparative management research and information gained from other related research.

## CHAPTER 1

### INTRODUCTION

#### 1.1 The Research Problem

In the late 1950s and early 1960s, the Singapore economy was beset with the serious problem of slow economic growth and high unemployment. Continued dependence on entrepot trade, the traditional economic lifeline, was not considered a viable solution. To solve the immediate problems then, the Singapore Government embarked on a systematic industrialization programme. At this stage, the Singapore Government focused on labour-intensive industries. Full employment was reached in 1974 and beginning from 1976 and particularly in the 1980s, Singapore experienced labour shortages. This led the Government to focus on the promotion of investment in the new technology industries and knowledge-intensive services which would continue to enjoy good market prospects in the future. As at mid 1983, U.S. investment in the Singaporean manufacturing industry was S\$3,479 millions in terms of gross fixed assets and Japanese investment was S\$2,099 millions; making them the largest and two most important investors in Singapore. Their combined investments accounted for approximately fifty four percent of the total foreign investments in Singapore (Source : Singapore Economic Development Board Annual Report 1983/1984).

The effectiveness of the U.S. and Japanese management systems therefore became vital to the survival and economic well-being of

Singapore. Of equal importance are the perceptions of the U.S. and Japanese managers of the effectiveness and the adaptability of their respective management systems to the Singaporean environment. Favourable perceptions by the managers on the effectiveness and the ease of adapting their management systems to the Singaporean environment may result in the existing companies increasing their investments in Singapore and also have the effect of encouraging other companies using the same management system to invest in Singapore. The primary objective of this research is the comparison of U.S. and Japanese management systems and the evaluation of their effectiveness and transferability with particular reference to manufacturing industry in Singapore. The problem was approached by investigating the application of U.S. management systems in Singapore-based U.S. subsidiaries, Japanese management systems in Singapore-based Japanese subsidiaries and the management systems in their respective parent companies. Specifically, the objectives of the investigations are :-

1. To determine the effectiveness of U.S. and Japanese management systems when applied in Singapore, with the eventual aim of identifying the features of effective management practices for manufacturing industry in Singapore. (
2. To determine the extent of transferability of U.S. and Japanese management systems to Singapore. The major issue is to determine which characteristics of both systems are transferable to Singapore.



3. To survey general problems encountered in the application of U.S. and Japanese management to Singaporean industries. Singapore has been considered as a newly industrialized country in the 1980s and is heavily dependent on U.S. and Japanese investments. Hence, the study was limited to the U.S. and Japanese subsidiaries in Singapore and their respective parent companies in the U.S. and Japan.
  
4. To explore the effectiveness of the research model adapted from Negandhi-Prasad (1971) model and Kelley-Worthley (1981) research design as a research model for the comparative study of U.S. - Japanese management systems and their transferability to a third country.

Since this study is essentially a cross-national comparative research, it also examines the state of comparative management theory. The theoretical issues addressed by this research are the different schools of thought on the transferability of management and methodological difficulties confronting comparative management studies.

## 1.2. Importance of the Study

A study of the effectiveness of U.S. and Japanese management systems and their transferability to manufacturing industry in Singapore is important because of the following factors :



1. U.S. and Japanese investments in manufacturing industry constitute a major portion of the Singapore economy.
  
2. Singapore can learn from the Japanese experience of adapting U.S. management system. Noda (1969) suggested that Japan owed much of its growth to the stimulus provided by the American occupation forces and many private individuals who had contributed much to the modernization of its management, notably the work of Peter F. Drucker and W.E. Deming. The long-standing tradition of learning from U.S. management techniques and successfully modifying and improving them to suit its needs had enabled Japan, which was a poor country a quarter century ago, to become the world's third largest industrial nation, surpassed only by the United States and the Soviet Union. In describing the emerging Japanese superstate, Kahn, Brown and Martel (1976) predicted that Japan will surpass all other nations in economic wealth by the end of the century. In a similar manner, the successful adaptation of the effective features of the U.S. and Japanese management systems in Singapore should contribute to its economic growth and prosperity.
  
3. Japanese managerial system may provide the greatest improvements in Singapore's economic performance. Frank (1975) noted that although gross national product per capita in Japan was still relatively low, it had increased twelve fold since 1948. Comparing manufacturing labour productivity in various countries and taking 1960 as the base of 100, the 1978 manufacturing

productivity indices were 181.0 for the United States, 175.0 for the United Kingdom, 160.6 for West Germany, and 413.0 for Japan. Japan's productivity has increased far faster than that in the West (Matsumoto, 1980). Vogel (1982) suggested that there is no reason to dispute the estimate of economists that the Japanese growth rate during the eighties will be something in the order of 5 to 6 per cent a year, substantially above that of the other industrial countries. This "Japanese miracle" substantiates the study of the effectiveness of Japanese management systems which are modified versions of the U.S. and European management techniques.

4. This study can highlight the problems of adapting U.S. or Japanese management systems for manufacturing industry in Singapore.

A factor influencing this research is that the study of Japanese management system have been given higher priority in Singapore. This was the main reason for launching the "Productivity Movement" in September 1981. From that time onwards, the Singapore Productivity Movement together with the much publicized annual "Productivity Lecture" by notable speakers like William Ouchi and Akio Morita bear many traces of Japanese influence (Wong K. C., 1986:1). Because of these reasons much more attention is given to Japanese management system throughout this study.

### 1.3 Research Methodology

Two well known comparative management researchers, Farmer and Richman (1965:141-142) noted that :

"Management isn't something that takes place in a black box isolated from all other activities in the country. It is completely interrelated with a variety of economic, political-legal, social, educational and cultural activities."

Farmer and Richman (1965) also pointed out that the study of transferability of management from one environment to another necessarily faces a very complex set of important factors. Influencing management systems under different environmental situations are a wide variety of external factors which the researcher can in no way control. They classified these factors into four broad categories : socio-cultural, educational, political-legal, and economic.

To better understand the uncontrollable factors which may influence this study on comparative management, a methodological review of comparative research is presented in chapter four. Chapter five presents the research model adapted from the Negandhi-Prasad (1971) model, Kelley - Worthley (1981) research design, and other related information from the literature research and pilot study. The primary objective of the research model is to determine the transferability of U.S. and Japanese management systems to Singapore.



The approach of this study includes :

1. A review of literature on comparative U.S. and Japanese management systems.
2. Interview and questionnaire analysis of selected U.S. and Japanese subsidiaries based in Singapore and questionnaire analysis of their parent companies in the U.S. and Japan respectively. A pilot study was carried out on sixteen firms to gather information on the research topics and the feedback on the validity of the interviews and questionnaires. The main study on eighty selected firms was carried out after analysing the results of the pilot study.
3. An analysis of data from the interviews and questionnaires was carried out after the main study. Some of the firms were then revisited to clarify certain important data for the presentation of the final results and conclusions.

#### 1.4 Assumptions and Limitations

For the purpose of this study it is assumed that published literature (after taking criticisms into consideration) pertaining to U.S. and Japanese management systems represents accurately actual conditions existing in the industrial firms in their respective countries. Hence previous studies, particularly those relating to "Japanese management system" where criticisms are

common, are critically examined before any assumption is adopted. The review of literature also is limited to items printed in English and available in the United States, England, and Singapore in the form of books, journals, related documents, and some translated Japanese literature. In addition, the comparison of U.S. and Japanese management systems and the extent of their transferability to the Singaporean environment was limited to the dominant features of each system and most of the data obtained were based on the perceptions of the participants who responded to the questionnaires and interviews.

## CHAPTER 2

### REVIEW OF LITERATURE RELATING TO COMPARATIVE MANAGEMENT

#### 2.1 Comparative Management : Objectives and scope of the field

The study of comparative management developed rapidly in the sixties with theories, conceptual models and field research, but it is still a relatively new field of interest. Most scholars refer to Harbison & Myer's Management in the Industrial World (1959) as one of the first significant comparative management studies. From this has developed a concern about the universality of management concepts, theories and methodologies. Multinational corporations have developed around the world and questions have arisen as to whether these corporations should manage their foreign and domestic operations in a similar way. Early mistakes and difficulties faced by managers when abroad warned them that something might be different there. Most international corporations are finding out that the success of a manager domestically, is no guarantee that he will be successful in other cultures (Nath, 1968:36).

Comparative management examines whether existing management theory, concepts and practices can be applied globally or not. Then, if there are differences, to evaluate to what extent they are affected by the external environment (political, economic, social, cultural forces prevailing in a country) leading to pointers about what works best in a given situation.

There are many definitions of the field of comparative management.

Schollhammer (1970:14) defines comparative management as :

"concerned with the systematic detection, identification, explanation and differences of managerial phenomena in different countries or regions. The analysis of the management-relevant similarities and variations in a comparative fashion forms then a basis for predictive statements about the degree of managerial effectiveness and productive efficiency and the improvement thereof"

Another definition given by Boddewyn (1969:208) defines comparative management as :

"Dealing with cross-cultural similarities and differences among actors, processes, structures, functions and environmental interactions".

That is, comparing managers as to :

- who they are (actors)
- what they do (process)
- how they are related to other people (structures)
- what they contribute (function in society)
- how they interact with environment

The common emphasis in these two definitions (and other definitions) is that comparative management involves the study of similarities and differences in management in different countries, the derivation of explanations for these differences and similarities and the determination of what works best in a particular region or country.



The main focus of the research reported in this thesis is the study of U.S. and Japanese management systems to determine which features of these systems work best in Singapore manufacturing industry. The research examines the transferability of U.S. and Japanese management systems and studies the problems encountered in their application to manufacturing industry in Singapore. Thus, this research may be classified as a comparative management study.

## 2.2 Comparative Management Research and Findings

Much comparative management literature aims at classifying findings or is devoted to synthesizing studies of the field. Nath (1968), Barrett and Bass (1970), Schollhammer (1973), and Boddewyn (1970) all provide extensive reviews and classifications of comparative management research. Barrett and Bass classify studies according to subject matter such as superior-subordinate relationships, managerial needs and motivation, etc., as shown in Table 1. Boddewyn (Table 2) and Schollhammer (Table 3) classify comparative management studies according to the types of research done such as theoretical abstract, empirical descriptive, or as focusing on actors, process, structure, environment, and function. Others, like Negandhi (1974) list the major findings as shown in Table 4. The first three tables also provide the methodologies used by the researchers which may provide useful guidelines for other researchers doing similar research.

It can be seen from table 1 to table 4 that in spite of its recent



Table 1

BARRETT & BASS : Classification of Comparative Management Research

Types of Study	Studies Representatives	Methodology
Superior-subordinate relationships	Mouton & Blake : Issues in transnational organization development in B.M. Bass, R.C. Cooper and J.A. Haas (ed.) <u>Managing for Accomplishment.</u> Lexington Mass : Heath Lexington pp. 208-224, (1970). also Haire et al. study (1966)	Self reports of 2,500 managers eight countries during grid seminars.
Managerial needs and motivation	Bass : <u>Program of Exercises for Management and Organizational Psychology</u> , 3rd Ed. Pittsburg Instad Ltd (1970)	Ranking eleven life goals.
Interpersonal perceptions	Alexander, Barrett, Bass and Ryterband (1970)	Perception of others on ranking life goals.
Organizational objectives	Barrett and Ryterband : "Cross cultural comparisons of corporate objectives on exercise objectives." <u>American Psychological Association</u> , San Francisco Sept. 1968	Simulation exercises on decisions to take.
Decision making under uncertainty	Thiagaragan and Bass : "Differential preferences or long vs short-term pay-offs in India and the United States." <u>Proceedings 16th Annual Congress of Applied Psychology</u> , Amsterdam Swets & Zeitlinger, 1969, p. 440-446.	Simulation exercises on compensation.
Managerial values	England : Personal Value System Analysis, as an aid to understanding organizational behavior. A comparative study in Japan, Korea and the U.S. (1969)	Questionnaire on personal values over 66 items.
Managerial behavior and organizational and environmental characteristics	McClelland and Winter : <u>Motivating Economic Achievement.</u> NY Free Press (1969).	Test on achievement applied to managers.

Table 2

BODDEWYN'S CLASSIFICATION OF COMPARATIVE MANAGEMENT RESEARCH

Types of Study	Study Representatives	Methodology
Focusing on actors	Warner and Abegglen : Big Business Leaders in Latin America.	Questionnaire
Process	Farmer and Richman (1965) Negandhi and Estafen (1965)	Concept and theory building.
Structure	Hartmann: Authority and Organization in German Management. Princeton University Press, (1959).	11 American subsidiaries compared with local firms.
Environment	Fayerweather : The Executive Overseas. N.Y. Syracuse University Press, (1959)	Interview 22 U.S. firms in the U.S. and in Mexico.
Function	Harbison and Myers : Management in the Industrial World. McGraw Hill Co., (1959).	Observation of steel companies and long term stay.

Table 3

SCHOLLHAMMER'S CLASSIFICATION OF COMPARATIVE MANAGEMENT RESEARCH

Types of Study	Study Representatives	Methodology
Theoretical abstract	Farmer and Richman : <u>Comparative Management and Economic Progress.</u> Homewood, Ill.: Irwin, (1965).	Concept and classification to arrive at consensus on variables affecting practices.
Empirical descriptive	Haire, Ghiselli, and Porter : <u>Managerial Thinking: An International Study.</u> N.Y. Wiley, (1966).	Standard questionnaire to 3,600 managers of 14 countries.
Analytical interpretative	Barrett and Bass : <u>Technical Reports.</u> Management Research Center, University of Rochester.	Simulation exercises administered to managers of different countries.
Generalizing normative	Gabriel : <u>The International Transfer of Corporate Skills : Management Contacts in Less Different Countries.</u> Cambridge Mass., Harvard Business School, Division of Research, (1967).	Case studies of European Managers.



Table 4

MAJOR FINDINGS OF CROSS-CULTURAL STUDIES (NEGANDHI, 1974)

1. U.S. managers are equally concerned with people and production while Japanese and South American managers are more concerned with production than with people (Grid Seminars' findings : Mouton and Blake).
2. The employees in Brazil preferred participative democratic style of leadership while in Japan employees preferred more authoritarian leaders. Overall, IBM employees in some 45 countries preferred consultative-type leadership (IBM Survey, Sirota).
3. In terms of managerial attitudes and behavior there seems to be a cultural cluster of developing countries which are not related in terms of culture as much as those of economic growth (Haire, Ghisselli, and Porter).
4. American managers have more favorable attitudes toward the average person's capacity for leadership and initiative than British or the Australians (Clark and McCabe).
5. British managers are more attuned to an authoritarian style of leadership than the American managers (Maier and Hoffman).
6. A majority of British managers (63%) thought the trait "imaginative" was more important for success as a top manager, while only a few (8%) of the Danish managers held the same opinion. Similarly one percent of the British managers thought "logical" as an important managerial trait while 50% of the Indian managers considered it as a very important trait (Ryterband and Barrett).
7. Role playing subordinates (in twelve countries) preferred more democratic relationships between supervisor and subordinates than the supervisors themselves (Thiagarajan and Deep).
8. The more total influence everyone has in the system, the greater the total system efficiency (Tannenbaum and Rus).
9. The Japanese managers shared information more than the Dutch military officers and Dutch managers. But Japanese managers have more difficulty in reaching final decision (Hesseling and Konnen).
10. There is definite culture differences in supervisory preferences and style. India has been found an authoritarian country as compared with other countries (Meade and Whittaker). Morale and productivity were higher under authoritarian than under democratic leadership in India, the results in the United States show the opposite effects (Meade).
11. Managers projected their own judgments onto others and they saw differences in a very specific way. For example, Indian managers projected their values mostly upon others and were also least accurate in rating other colleagues. But they did not disparage others. In contrast, the British managers projected almost as much as the Indian managers but did not negate others. The Danish, Norwegian, Italian and Spanish were similar in both empathy and

projection, but the Danish and Spanish were high on negotiation than Italian and Norwegian managers (Barrett and Ryterband).

12. There seems a significant difference between managers from various countries both in their problem-solving decisions and other listing of corporate objectives. Tentative data indicate the economic factors seem to be of more importance than the cultural variables in this regard. For example, Indian and Columbian managers put less emphasis on meeting competition than do the American, British, and Dutch managers. In general, managers in developed countries stress upon objectives of growth and competition; while their counterparts in developing countries are satisfied with the usual maintenance of their operations (Hoekstra, Barrett and Ryterband).
13. Managers from developed countries give the poor performer less than average money in terms of increments as against the manager from the developing countries who did not differentiate salary increments between the poor and average performers (Thiagarajan).
14. Indian managers prefer high risk and ideal outcomes while American managers prefer moderate risk with moderate outcome. (Thiagarajan and Bass).
15. In terms of the value systems, the majority of the managers in each country are pragmatically oriented (England).
16. Manager's orientation in each country is different than student orientation (England and Koike).
17. Although there are similarities in manager's orientation, G.W. England has advanced the thesis that the cultural factors do make difference in managers' orientations (England).
18. The conflict between family and business roles seems especially troublesome for the French-Canadian managers while the English-Canadian manager could easily live with these conflicting roles (Auclair).
19. Average level of achievement in a nation is a predictor of subsequent economic growth (McClelland).
20. More democratic supervisory style is associated with greater growth in GNP and per capita income (Barrett and Franke).
21. Anglo-American tend to regard work as an important end in itself; while the concept of work as an end in itself is largely alien to the Mexican culture. (McCann).
22. Utilization of scientific method is second nature to the U.S. managers. Mexican managers hold no such regard and respect for scientific method (McCann).
23. Whereas U.S. managers can be characterized as being "Pro-delegation", Mexican managers can be characterized as being "anti-delegation". Participative management embodies a threat to the Mexican manager's role and image as others see it and is incompatible with his role as he himself perceives it (McCann).



origin there is already a diversity of findings, research methodologies, and attempted syntheses in the field of comparative management. Comparative management studies have not reached conclusive results. While the findings of some studies have found no real differences in managerial principles governing management practices among different countries, others have suggested that the differences are considerable. The general issue can therefore be identified as whether or not management principles are universal and hence transferable. It is possible to identify three main schools of thought on the universality or transferability of management :

1. Management is management wherever practised. It is a universal profession whose principles can be applied in every organized form of human activity.
2. Management is culture-bound and management theory may not be transferred from one culture to another because of the diversity in the cultural environment.
3. The influence of culture is discernible from the way in which countries cluster according to similarities in cultural traditions. This third approach is the middle between the first two views as it tries to cluster countries together by considering similarities like Nordic-European, Latin European, Anglo-American, developing countries, and Japan.

The universalist school, represented by Harbison and Myers (1959), Koontz and O'Donnell (1968), holds that management is transferable

and is linked to economic progress and industrialization. Other proponents of this school include Mouton and Blake (1970), Koontz (1969), and Likert (1963). Harbison and Myers (1959), after studying management practices in 23 countries, suggested that organization building has its logic which rests upon the development of management and there is a general logic of management which has applicability both to advanced and newly industrializing countries in the modern world. They maintain that industrialization brings about an increasing specialization of functions within industrial organizations. Harbison and Myers (1959) give comprehensive analyses of data and provide many insights into comparative management. However, a possible weakness is that some of their analyses were based on a number of country studies which were conducted by independent researchers at different times using different data collection procedures. This may affect the accuracy of analyses due to possible biases caused by the difference in sample sizes and possible inconsistency of data collected at different time by different researchers.

Koontz and O'Donnell (1968:4) believe that managers around the world face the same kinds of problems and difficulties, only with different perspectives, levels of importance, and under different capacities:

"Management is essentially the same process in all forms of enterprise and at all levels of organization, although the goals and environment of management may differ considerably."

In a later work Koontz and O'Donnell (1972:82) assert that :

"even those who question the transferability of managerial knowledge and the universality of management principles admit that the application of American management knowledge in other countries has often been successful."

The universalist school may be criticized for failing to consider the problem of relative efficiencies between firms operating in different external environments. For example, Koontz and O'Donnell (1968) suggest generalized "principles of management" to guide managers in the efficient discharge of their managerial responsibilities. It can be argued that any close study of an organization's major functions and application of fundamental principles of management can usually be expected to result in higher firm efficiency. However, similar approaches used in different industrial organizations or different external environments may give rise to different levels of efficiency. This controversy casts doubt on the universalist school and has led to the second school of thought.

The second school of thought claims that management is not universal but is culture-bound. Oberg (1963), in his study on problems facing managers using a sample of 106 and 51 executives from U.S. and Brazil respectively found that the two groups of executives have remarkably few problems in common. He states :

"My own experience in international management leads me to believe that cultural differences from one country to another are more significant than many



writers now appear to recognize. For example, the skills that lead to managerial success in the U.S., may not be the skills that lead to managerial success in Brazil, to take the two countries with whose managers I am most familiar." (1963:129-130).

Oberg (1963:142) concludes that the universalists' claim is hardly warranted by either evidence or intuition in the development of management science.

Gonzales and McMillan (1961:41) are among those who believe that management is culture-bound and comment that :

"American management experience abroad provides evidence that our uniquely American philosophy of management is not universally applicable but rather is a special case."

A major criticism against the second school is that "culture" is used in an all-inclusive manner to explain differences in comparative management studies. Another argument is that certain management principles may be transferable into differing cultures or environments although it is unlikely that all management principles are truly universal for all known cultures in the world. Even Gonzales and McMillan (1961:39) admit that "American management is most highly respected abroad ... and American management know-how has yield great dividends for the host country." In another research, Negandhi and Estafen (1965:312) suggest that certain elements of management philosophy may be transferred into a differing environment. However, they did not identified which these elements were. They argue that American and British companies

operating in foreign countries are more efficient than domestic companies and that the higher efficiency is not entirely due to their advanced technical know-how but also due to managerial know-how. This implies that certain aspects of management know-how are transferable.

The third school of thought, that cultural influence is discernible from the way in which countries cluster according to cultural traditions, is based on a number of separate studies. In a study of cultural patterns in the role of the manager, Haire et al. (1966) examined the managerial attitudes of 3,641 managers in fourteen different countries, including Japan and the United States. They identify five major clusters : Nordic-European (Norway, Denmark, Germany, and Sweden); Latin-European (France, Spain, Italy, and Belgium); Anglo-American (United-States and England); and Developing countries (Argentina, Chile, and India), and finally Japan by itself. Their findings show that similarities of managers' attitudes are associated with linguistic and geographical proximity. Several researchers have extended Haire et al. (1966) study related to attitudes and assumptions underlying practices to different national and regional settings. For example, Clarke and McCabe (1970) surveyed 1339 managers from many different types of organizations in Australia and found Australian managers to be more similar to British and American managers than to managers from any other national or cultural group. Cummings and Schmidt (1972) found that Greek managers clustered with Latin-European group from Haire et al. (1966) study.

A comparison of the three schools of thought shows that the main focus is on the issue of cultural influence. The first school de-emphasizes the impact of culture; the second emphasizes the impact of culture; and the third recognizes the impact of cultural influence as discernible from the way in which countries cluster according to cultural traditions.

### 2.3 Implications for this research

The main objective of the present research is to determine the extent of transferability of U.S. and Japanese management systems to Singapore manufacturing industry. This implies examination of the issue of universality or transferability of management. The study examines which features of the U.S. and Japanese management systems are transferable into the Singapore environment and their relative effectiveness. This research has a major advantage over previous studies since two management systems are examined and compared simultaneously regarding their transferability to a third country. Assuming that original U.S. and Japanese management systems are used in Singapore, the universality of management could be supported if the research results suggest no significant difference in the effectiveness of management systems between U.S. and Japanese parent companies and their respective subsidiaries in Singapore. However, since the research involves only three countries it is too small a sample to examine the third school of thought which concerns cultural clusters.



Farmer and Richman (1964:56) in stressing the importance of external constraints on managerial efficiency state :

"In effect, most studies of management have taken place within a "black-box" labelled management, without much concern for the external environment in which the firm may operate. As long as this external environment is about the same for all firms, the approach is valid; however, in cases where the environment differs significantly, present theory is inadequate to explain comparative differentials in efficiency."

The non-universalist schools have tried to identify, either empirically or conceptually, what are the main independent variables affecting country practices. In practice, much of the research has consisted of studying certain characteristics in a range of countries and if differences were seen, to infer that they were culturally determined. In doing so, proponents of cultural explanations may make the same mistake in their analyses which Farmer and Richman criticized in their "black box" approach to management studies. As Ajiferuke and Boddewyn (1970:161) conclude from a review of thirty-three comparative management studies :

"while comparative management studies have had the salutary effects of making us look at other philosophies and practices and forcing us to question the unqualified universality of our management "principle," we must watch against new pitfalls created by this shift. Some years ago, Farmer and Richman cautioned against what they termed the "black box" approach to management studies ... Unfortunately, proponents of cultural explanations make this very same mistake in their analysis. Only in their case, instead of the "black box" being labelled "Management," it is called "Culture" - a concept which is often made to stand for many unspecified influences."



In attempts to develop useful conceptual frameworks for research in comparative management, Farmer and Richman (1964, 1965), Negandhi and Estafen (1965), Estafen (1971), Negandhi and Prasad (1971), have listed environmental country variables as major determinants of management processes and effectiveness. Models for comparative management research were also presented by these researchers. Thus, to avoid the "black-box" approach cautioned against by Farmer and Richman, it is necessary to examine environmental variables carefully since the present study involves firms operating in three different countries. This is carried out in section 5.3 where the effects of environmental variables which may affect managerial effectiveness are examined in the development of questionnaires and in chapter five where the various conceptual research models used in comparative management research are examined for the formulation of a research model suitable for the purpose of this research.

Finally, the firms studied in this research are multi-national firms with subsidiaries operating in Singapore and parent companies based in the U.S. or Japan. Therefore, in this research, environmental constraints such as culture may be of considerable importance. Section 2.4 discusses the role of culture in this comparative management research.

#### 2.4 The Role of Culture in this Research

The study carried out by Kelley and Worthley (1981) on the various conflicting positions in the cross-cultural management literature

concerning the relationship between culture and management practices seems to be of special importance to this comparative management research. They suggest that most cross-cultural studies are actually cross-national studies which compare socio-cultural, political, and economic systems and not just culture. According to Kelley and Worthley, the role of culture in terms of management attitudes is still not generally agreed and they identify three problems for the different positions regarding the linkage between culture and management attitudes, behaviour, and effectiveness.

. Problem 1 : Vague definitions of culture

This problem has also been pointed out by Child and Kieser (1977) and Ajiferuke and Boddewyn (1970).

Child and Kieser (1977:2) state :

Cultures may be defined as patterns of thought and manners which are widely shared. The boundaries of the social collectivity within which this sharing takes place are problematic so that it may make as much sense to refer to a class or regional culture as to a national culture.

Ajiferuke and Boddewyn (1970:154) in their survey of comparative management studies state :

Culture is one of those terms that defy a single all-purpose definition, and there are almost as many meanings of "culture" as people using the term. Therefore, we find among the studies using a cultural explanation for managerial differences, a varied and

and widely divergent array of conceptions.

The difficulty of defining culture has been pointed out by most researchers. For instance, Lammers and Hickson comment that "culture" is a somewhat ambiguous concept (1979a:6) and go on to state that "we prefer to use the term culture not in the broad sense of the societal whole, but in the narrow sense of patterns of norms and roles, embedded in paramount values." (1979b:402).

Thus, it can be seen that "culture" in comparative management cannot be defined precisely nor is there a common definition accepted by all researchers. This is dramatically highlighted by the 164 definitions of culture cited by Kroeber and Kluckhohn (1952). It might be argued that although an all-embracing definition of culture may not be possible, for the purpose of research some analytical framework could be developed incorporating an understanding of culture that would be generally acceptable. However, a further factor in this study is involved: the difficulty of identifying and defining culture is considerably greater than in other studies because Singapore is a relatively new multi-racial migrant society comprising of Chinese, Malays, Indians and Eurasians and therefore lacks a dominant cultural tradition.

Problem 2 : Methodological difficulties of accurate translation  
and having a representative sample

This is illustrated by Child's (1981) analysis which points to a



general lack of theory to guide research efforts on cross-cultural analysis, particularly regarding the relevance of cultural dimensions of the external organizational environment. This problem is further discussed in chapters four and five.

Problem 3 : Studies purporting to have a culture-free context are actually national studies

Kelley and Worthley (1981:165) argue that :

"It might be that the cultures have similar attitudes on those variables closely associated with management but no differences because of culture were reported. For example, the values of American and English managers might be similar, or more similar, than those of Taiwanese and Korean managers. Regardless, the argument can be made that the use of a national sample is not in the strictest sense a sample testing for the impact of culture."

Kelley and Worthley's description of the third problem may not be adequate since they give little attention is given to the various "culture-free" studies. "Culture-free" studies are more complex and can be criticized for a number of shortcomings. A more rigorous and extensive analysis of the third problem is provided by Child (1981:308). Child noted that the arguments to the effect that culture has little or no relevance for significant organizational variables or relationships are the "culture-free" thesis advanced by some contingency theorists and the argument from capitalism, which asserts that culture per se has little relevance except in terms of either ideology or class-consciousness.



The contingency theorists have consistently argued that contingencies such as scale, technology, task environment and dependence are more fundamental influences which operate to similar effect regardless of cultural factors. Child (1981:309) identifies three main categories of contingency theory which posits that influences are deemed to prevail irrespective of variations in national cultures :

1. Technology molds, or sets the conditions for certain features of job and organizational design (Woodward, 1965; Parker et al., 1977).

2. The relationship between variables of organizational context, especially size, technology and dependence on other organizations, on one hand , and the structural characteristics on the other, will be stable across nations (Hickson et al., 1974, 1979; Horvath et al., 1976).

3. Business organizations will pass through similar stages of structural development as they grow, and that strategic commitments to market and technological diversification will necessarily shape the structures of organizations that are to remain equally effective (Chandler, 1962; Rumelt, 1974; Channon, 1973,1978)

All three contingency arguments have been criticized by Child (1981) for two major weaknesses:

1. They overlook the possibilities of functional equivalents whereby different forms of organization, and behaviour and social relations within them, can perform sufficiently well for survival.

2. The types of measurement used by contingency theorists are not likely to be highly sensitive to cultural effects in that they focus upon highly formalistic, and generally broad, features of organization structure. This criticism is supported by Maurice (1979:44) who states :

"one may question the concept of 'universalism', at least as it is being used by proponents of the culture-free thesis... dimensions of the formal structures of the organization as well as the relationship between these dimensions and the contextual variables are based upon 'concepts (and indicators) to which their very generality gives ipso facto the status of universality, thus undermining the possibility of really testing for national (or cultural) effect."

From the above review, one may be convinced that the validity of "culture-free" thesis may be challenged for its failure to recognize the presence of functional equivalents which suggests the exercise of strategic choice and the methodological bias which may remove cultural dimensions from organizations and their structures. Child rightly concludes that while adjustment to contingency is undoubtedly a reality in organizations, the explanation solely in terms of contingency is unlikely to be sufficient. The limitations of the contingency perspective in comparative U.S. - Japanese management studies is further discussed in section 3.1.

The three problems identified by Kelley and Worthley describe the general difficulties in dealing with the role of culture in comparative management research. They have proposed a sample design as depicted in figure 4 to isolate the role of culture (1981:167); this design is used in section 5.5 for the purpose of developing the research design for this study. A major criticism against most research models, for example, Farmer-Richman (1965:25) and Negandhi-Prasad (1971:23) as shown in figures 1 and 3 respectively, is that they do not isolate the impact of culture and are actually national studies that also reflect environmental factors such as educational, sociological, economic, and legal systems. Kelley and Worthley's research design, however, is a suitable design to isolate the role of culture as it differentiate between cultural variance within a given socio-economic location.

## 2.5 Conclusions

The objectives and scope of comparative management have been discussed in this chapter. Referring to definitions of comparative management provided by previous researchers, this present study can be classified as a comparative management investigation. The review of the more prominent studies shows that the study of comparative management is in an early stage of development. Much existing work is concerned with the identification and description of differences across cultures in order to assess what will work best in a given situation. Examination of comparative findings shown in Tables 1 to 4 suggests that in spite of its recent origin there is a diversity of findings and conceptual research models. The



examination of the various conceptual models used in comparative management research regarding their advantages and disadvantages is therefore necessary for the formulation of a research model suitable for the purpose of this research. Section 5.1 is devoted to the formulation of the research model.

The review also suggests that it is possible to examine the issue of universality or transferability of management in this research. Previous researchers have cautioned against a "black-box" approach to management studies and emphasized the importance of national environmental variables as major determinants of management processes and effectiveness. These variables are examined in section 5.3 for the development of the survey questionnaires used in this research. Because of the posited relevance of national environmental variables and due to the lack of a dominant cultural tradition in the relatively new multi-racial migrant society in Singapore and the difficulty of its defining culture precisely, the present study should be considered as a cross-national study in comparative management rather than a purely cross-cultural study in comparative management.



## CHAPTER 3

### REVIEW OF LITERATURE RELATING TO COMPARATIVE U.S. AND JAPANESE MANAGEMENT

#### 3.1 Introduction

There has been a burgeoning interest in comparative U.S. and Japanese management studies on aspects of productivity due to the increasing importance resulting from the spread of their technologies and investments on a worldwide basis. A review of literature relating to comparative U.S. and Japanese management systems is necessary to identify the findings of previous researchers and the difficulties faced by them. In addition, the analysis of literature relating to comparative U.S. - Japanese management systems can provide much insight into the weaknesses and strengths of each management system. Such information is useful in identifying priority areas of research and in providing guidelines for carrying out the research. This chapter presents a review of literature relating to comparative U.S. - Japanese management systems.

Abegglen (1958) carried out the first modern comparison of U.S. and Japanese management systems and noted that the Japanese management system differs significantly from the U.S. management system. Lifetime employment, the recruitment of new graduates directly from school, promotion from within, group responsibility, and the seniority-based wage system were identified as the predominant

characteristics unique to the Japanese management system. Most subsequent comparative U.S. - Japanese management studies have been strongly influenced by Abegglen's findings. These comparative U.S. - Japanese management studies focused on the unique characteristic of the Japanese management system such as lifetime employment, seniority-based wages, decision-making by consensus, etc., and attempt to explain how these institutions function and why they emerged.

Other studies have focused on the contingency theory. Contingency theory was first proposed by British researchers Burns and Stalker (1961) and Woodward (1965). This theory suggests that the gradual accumulation of complex technology is the driving force for change and that the system combines technology and people in such a way that the machines can be as productive as possible. The theory assumes that since human nature is very similar, the same technology is likely to produce similar institutions regardless of location.

Hence, studies on comparative U.S. - Japanese management systems may be classified into two broad categories : (1) studies distinguishing unique features of Japanese management system from U.S. management system (section 3.3); (2) studies contributing to a contingency theory for the comparative analysis of U.S. and Japanese organizations (section 3.4).

The Americans, British, and Europeans are the major pioneers of modern management and during the last 100 years has evolved most of

management's current principles and theories. By comparison, Japan is a non-Western nation that in three decades has transformed itself from a war ravaged and under developed country to a modern industrialized nation.

Akio Morita (1984), Chairman of the Sony Corporation states that Japanese industries regard American industries as their teacher in both technology and management techniques (Morita, 1984). However, although the Japanese have learned and adapted many U.S. managerial techniques for their own specific needs, there are substantial differences between Japanese and U.S. management systems. Pegels (1984:57) states :

"... Western industrial managers are flocking to visit industrial plants in Japan and to confer with Japan's successful manufacturing people with the intention of borrowing the more applicable Japanese production methods and management techniques. These visits is essentially a reversal of the visits of Japanese managers to Western firms, which began in the mid-1950's and continued to the mid-1970's."

Hence, the fact that Japanese management is both very successful and relatively new, yet is already significantly different from U.S. management system, makes it necessary to discuss the origins of the Japanese management system (section 3.2).

### 3.2 The Origins of Japanese Management

Dore's (1973:375-403) comparative analysis of industrial relations systems of England and Japan provides an excellent review on the



origins of Japanese employment system. From his review and other notable studies (i.e. Harbison and Myers, 1959; Abegglen, 1958; Cole, 1979; Child, 1981; Sethi et al., 1984; and Alston 1986) it is possible to suggest three schools of thoughts about the origins of Japanese management as : (1) the convergence/contingency thesis (section 3.2.1); (2) the late development hypothesis (section 3.2.2); and (3) the culturalist approach (section 3.2.3).

### 3.2.1 The Convergence/Contingency Thesis

Proponents of the convergence/contingency thesis argue that although Japan is backward in her progress to modernity, she will eventually catch up and there will be a convergence of the structure and functioning of Japanese industrial organizations with the rest of industrialized nations. Studies supporting the convergence thesis include Form (1969), Marsh & Mannari (1976), and Negandhi (1979).

The convergence thesis generally asserts that complex technological organization characteristics of advanced industrial societies may produce similar outcomes or as commented by Marsh & Mannari (1976:3-4) :

"This theory holds that as societies become more highly modernized they tend to become more alike in their social and cultural structure... The convergence theory of modernization as applied to the level of complex organizations, would predict a similar convergence in the social organization of Japanese and Western firms"

One weakness of comparative studies postulating the convergence



thesis as the origins of Japanese management is the implication that Japanese management are non-modern with the process of change also operating toward the idealized Western pattern. For example, Marsh and Mannari (1976:337) argue that an examination of contemporary practices reveals either an absence of traditional Japanese elements or a transition away from them. They suggest that social organizational variables that are more distinctly Japanese (i.e. paternalism, lifetime commitment) have less causal impact on performance than do the more universal social organizational variables (i.e. status, job satisfaction). An implication in their study was that Western management practices are modern and Japanese management practices are non-modern. For example, "when pay is predominantly based on seniority, we shall define the pattern as traditional; the greater the influence of job classification and performance relative to seniority, the more modern the pattern will be defined as being." (Marsh and Mannari, 1976:138). Hence, the process of modernization is conceptualized as always moving toward the idealized Western practices. Marsh and Mannari (1976) gave no evidence to support their assumption. In addition, recent notable studies like Ouchi (1982) and Sethi et al. (1984) have suggested that good examples of group-oriented Japanese management practices are also found in well managed U.S. companies such as IBM and Hewlett Packard. Thus the assumption that Japanese is non-modern is hard to justify.

Other limitations of the convergence/contingency arguments are discussed in sections 2.4 and 3.4.1. The above review suggests that

convergence thesis is a weak argument for explaining the origins of Japanese management system. Child's analysis is certainly appropriate as a conclusion for this section :-

"convergence thesis has now been largely discredited, although not solely on the basis of arguing from the premise of persistent 'cultural' effects ... differences may also be due to what he (Dore, 1973) calls the 'late development effect'" (1981:318)

### 3.2.2 Late Development Hypothesis

Dore (1973) suggests the "late development effect" to explain the pattern of industrial relations in Japan. The hypothesis is based on the fact that those countries such as Japan and West Germany who were late starters in the process of industrialization have some advantages over countries which industrialized earlier.. This advantage is based on the accumulation of utilized information and technology. The later a nation starts the drive toward modern economic growth, the larger the unutilized store of information available from which to choose, and the greater the opportunity for the nation to choose from among the most up-to-date techniques.

Dore (1973) states that there is a late development effect, not only in material technology, but also in social technology, educational systems, methods of personnel management, committee procedures, and ideologies related to a general desire for social equality. The late developers have as a result an advantage over the early developers, in that they can develop more advanced patterns of social organizations. Dore traces some major aspects of the

Japanese style management, such as the permanent employment and intensive on the job training, through the late development thesis. However, Dore's methodology is subject to two possible weakness.

#### First weakness

Dore uses the late development hypothesis to explain the emergence of permanent employment (typical Japanese factory depicted as organization-oriented) in Japan and victory of market principles (to buy the cheapest labour at the highest productivity) over permanent employment in Britain. The relevant time-periods considered for Japan was 1880 to 1930 and for Britain, the first three-quarters of the nineteenth century. Thirteen differences between Britain and Japan were suggested by Dore (1973:408-415) as the differences between early and late developers. The criticism here is that the analysis covers very long periods and data within such long periods are arbitrary selected for supporting the late development hypothesis. For example, Dore (1973:414) suggests that because absenteeism and high turn-over were more costly to the heavily capitalized Japanese employer who bought his machines from high-wage countries, there was a need to stabilize employment of even semi-skilled machine operators. However, semi-skilled operators did not get a meaningful guarantee of permanent employment until post World War II (Cole, 1979:30). Cole suggests that such stabilization of employment could not have been a response to the nature of the capital-intensive machinery adopted by the Japanese in the pre-1930 period.



## Second weakness

As criticized by Cole (1979:31), Dore reports what is most unique in comparison between Japan and Britain and may have omitted what is most important in Japan. As Marsh and Mannari (1976:336) put it :-

"lifetime commitment pattern may be distinctive to Japan - relative to the United States or Britain - but it may not be the most important characteristics of Japanese firms."

Cole, Marsh and Mannari all noted that this is a common failure of comparative studies. Hence, in this study the questionnaires and interview forms are developed to obtain comparative data not only on the features distinctive in the comparison between U.S. and Japanese management but also the more universal social variables (i.e. status, job satisfaction, importance of wealth, etc) which Marsh and Mannari suggested as being more important.

Cole (1979:31) in criticizing Dore's (1973) study declares:

"It does seem apparent that the increased role of government, technological discontinuity, and the rapid growth of education are characteristics of late developers. These factors, however, are not sufficient to explain institutional features such as permanent employment in Japan."

Cole (1979) did not deny the existent of the late development effect but emphasizes that there are major differences in the management styles and industrial relations between West Germany and Japan, both

late developers, to illustrate the insufficiency of the late development hypothesis.

Studies by Littler (1983) and Urabe (1977, 1978) (among Japanese scholars) argue that the employment and personnel aspects (i.e. seniority wage system, lifetime employment and paternalism) of the Japanese management system arose quite early and not particularly in response to an opportunity to learn from the mistakes of early developers. These aspects were gradually adopted from early 1920s in response to particular problems of labour and skill shortages (Litter, 1983:186). Post world war II the Japanese approach was further developed after union power was broken in the early 1950s. In short, it can be argued that the Japanese approach is, at least in part, a response to Japanese problems. To summarize, the late development thesis by itself is unlikely to be sufficient in explaining the origins of the organization-oriented Japanese management system.

The discussions on convergence theory and the late development thesis suggest that neither has been able to give a full account on the origins of Japanese management system and its differences from other developed countries.

### 3.2.3 The Culturalist Approach

The third approach for explaining the origins of Japanese management is the culturalist approach. Abegglen (1958) in his pioneer study

of the Japanese factory concluded that Japanese management practice was grown out of traditional social relations. Even scholars who are well known as advocates of either the convergence theory or the late-development hypothesis have suggested that culture may play an important role in organization and management practices. For example, Kerr, Dunlop, Harbison and Myers (1960:267) state :

"we sought to explain the developments in part as due to the logic of industrialism itself and in part to specific cultural and environmental influences within the nation."

Thus, although Harbison and Myers (1959) maintain that the logic of industrialization prevails whatever the cultural setting, their later book expresses the view that cultural influences may also be an explanatory factor.

Dore (1973:13) in explaining the variations of the "late development effect" thesis states :

"There remains a good deal of the differences between Japan and Britain which it seems only reasonable to ascribe to their different cultural traditions or to their respective histories."

Notable studies which suggest that culture is one of the major determinants of the structure and functioning of organizations include Abegglen's (1958) study of factory organization in Japan; Crozier's (1964) study of two public agencies in France which suggests that the bureaucracy in French public organizations could be explained by the French culture; Sethi et al. (1984) study on



the illusions and realities of the Japanese management system; and Alston's (1986) publication on blending American and Japanese managerial practices. These studies are examples of a large body of literature supporting the impact of culture on work organizations.

Sethi et al. (1984) in examining the relevance and adaptability of Japanese management techniques in the United States state :

"Can the Japanese system adapt itself to meeting the needs of its host culture without, in the process, largely losing its own identity and essential characteristics? We contend that the answer is 'no.'" (Sethi et al. 1984:241).

In a recent book, Alston (1986:V) states :

"Management cannot be separated from culture. Japanese managers rely on traditional values and social customs to achieve high levels of workers productivity in modern industrial sectors. Japanese managerial arrangements reflect, and reinforce, traditional values. It is this melding of modern practices and traditional values that has helped the Japanese achieve international economic preeminence."

#### 3.2.4 Summary

From the preceding review and comparison of literature on the three schools of thoughts regarding the origins of the Japanese style of management, it can be concluded that culture is a determinant of Japanese management style and organizational behaviour. The question is the extent of this influence.

### 3.3 Studies distinguishing unique features of Japanese management system from U.S. management system

Abegglen (1958), Whitehill (1964), Whitehill and Takezawa (1968,1981), Sirota and Greenwood (1971), Pascale (1978b), Clark (1979), Ouchi and Jaeger (1978), Ouchi (1982), Sethi (1975), Sethi et al. (1984) and Alston (1986) are among those researchers who have studied how unique Japanese management features such as (1) lifetime employment; (2) decision-making by consensus; (3) infrequent and implicit performance evaluation; (4) non-specialized career paths; (5) paternalism; and (6) seniority-based wage system function and why they emerged. These features are in contrast to the common features of American management style which include short-term employment, individual decision-making, frequent evaluation and promotion, segmented concern for people and performance-based wage system. The unique Japanese management features have been viewed by most of these researchers as the main reasons behind Japan's economic success. According to them, these unique features also enable the Japanese to remain competitive and respond to challenges.

#### 3.3.1 Lifetime Employment

Abegglen (1958) used the term "lifetime commitment" to explain one of the most distinct characteristics of the Japanese employment system. Most employees of larger firms in Japan join these firms at the beginning of their working lives and expect to stay with the

company for the rest of their working years (i.e. to 55 years of age in most cases).

Abegglen assumes the practice as growing out of traditional social relations. This assumption can be criticized as incorrect as later studies show that the practice was institutionalized only during and after World War I as a result of the employers' desire to reduce high labour turnover (Taira, 1962; Okochi, 1965; Littler, 1983:186). The average age of entry for all employees in Dore's (1973) study of a Japanese factory was 21.8 years. Dore suggests that stability of employment in Japan is based on some unique expectations on both sides of the employment contract. The employee has the expectation that he will stay with his chosen firm simply because this is the norm of the occupational life in Japan. Dore's study, though convincing, is limited to the paired comparison of two major manufacturers of electrical equipment (one in England and the other in Japan). Thus, one can question whether findings based on such a small sample can be considered as accurate representation of the management systems being studied.

Whitehill (1964)'s systematic two-nation study of Japanese and American blue-collar workers is more extensive and involved 2,000 production workers employed by four comparable firms in both the United States and Japan. He found that Japanese workers expected more of management in providing continuity of employment than American workers. On the other hand, the employer expects that, provided he offers standard working conditions, wages, and fringe



benefits, the worker will stay with the firm. In a more recent study, Clark (1979:176) found that in comparison to Western practices, there was indeed a lifetime employment system in Japan although many people left the company for one reason or another. However, other studies suggest that life-time employment is extended to only about a third of Japan's workforce because women and temporary workers are never granted this benefit (Ong, T. H. 1986:32; Sethi et al., 1984:48). From the foregoing review, it can be suggested that lifetime employment is a unique feature of Japanese management and findings of previous studies differ only in confirming the extent to which it is being practised.

### 3.3.2 Decision Making by Consensus

Japanese management values highly the spirit of harmony for goal achievement. The Japanese method of reaching decisions was designed to avoid pinpointing responsibility for mistakes (Matsuda and Morohoshi, 1973-74). It consists of collective decision-making and is referred to as the "ringi" system. The system is based on emphasis on a flow of information and initiation from the bottom up, making top management the facilitator of decision making rather than the issuer of edicts.

In the ringi system, proposals are usually initiated by the lower or middle managers and are passed to successively higher management levels. By the time the proposal reaches the manager, he will be already briefed and persuaded by the initiator of the proposal. Each manager places his stamp on the proposal when he receives it, an act

of confirmation of what has been informally and orally agreed upon through the various means of discussions, compromise and concession-making. Thus, lower and middle management is used as the impetus for, and shaper of, solutions to problems. Consensus is stressed as the way of making decisions, while close attention is paid to the personal well-being of employees (Johnson & Ouchi, 1974; Sethi, 1984; Yoshino, 1968, 1979). Noda et al. (1968) revealed that 92 percent of the 400 firms studied were employing decision-making by consensus. The advantages attained with the consensual decision-making were seen as far outweighing the drawbacks encountered.

The ringi system allows for a more thorough analysis of a problem before a decision is reached. The correct question is first sought and only then is the answer developed (Drucker, 1971). The result is that important factors are rarely overlooked. The tension of change is also alleviated as each person affected by a decision would know the changes beforehand. In addition, members of the organization have a chance to influence the decision before it is adopted and therefore is more willing to commit to a decision once it is made. The ringi system also allows for bolder and more innovative decisions to be made since the approval by most members is necessary for innovative decisions to be successfully implemented. Finally the ringi system considers the total organization rather than one department or individual.

The drawback of the decision-making by consensus system is its excruciatingly slow pace because of the many people whom consensus

have to be sought and secrets are difficult to keep. Most studies have reported similar findings on this unique feature. Drucker (1971:111) states :

"If there is one point which all authorities on Japan are in agreement, it is that Japanese institutions, whether businesses or government agencies, make decisions by 'consensus'".

Decision making in American corporations is essentially a top-down phenomenon. "American business schools perpetuate this view with their academic emphasis on decision execution rather than decision formulation and on professional leadership instead of consultative processes." (Sethi et al., 1984:131). In contrast to U.S. decision-making, decisions in Japanese organizations are made by everyone who will feel their impacts and since almost everyone who is involved in the implementation of the decision was part of the decision-making process, the execution of the decisions is fast although the decision-making process is very slow.

### 3.3.3 Infrequent and Implicit Performance Evaluation

Western management proposes that in order to keep the subordinate informed of his performance in the organization, it is the responsibility of the management to perform formal, frequent and very objective and explicit performance evaluations. It is expected that this method of evaluation will lead to higher job satisfaction among the employees and there are many studies [for example, Koontz (1972) and Rider (1973)] which suggest guidelines in order to make



appraisals even more explicit and formal. Other studies like Oberg (1972) suggest that at least three out of every four firms in the United States use some kind of performance appraisal system.

The Japanese performance appraisal system, however, is infrequent, informal, and implicit. The personnel department in each firm accumulates extensive dossiers and records of earlier merit ratings for each of the possible candidates for a higher position. The recommendations of the immediate supervisor and department manager are checked at a higher management level before one is promoted to a higher position. This practice is true for both the managerial and non-managerial positions. Dore (1973) suggests that the Japanese system provides for promotion in rank and promotion in function. It is possible for promotion systems to provide for a regular progression through ranks without necessarily involving a succession of functions. This system is more flexible and allows faithful service by employees with mediocre ability to be rewarded by an increase in rank without the disadvantage of dysfunctionally promoting them to positions of greater authority. Salary scales are tied to ranks rather than to positions.

Promotion in Japanese firms is slow in comparison to American firms. Ouchi (1982:22) states that a Japanese employee would generally be considered for a higher promotion only after ten years of service. For the initial ten years a Japanese employee will expect to receive exactly the same increases in pay and same promotions as all other employees who joined the firm with him at the same level. In contrast, American employees expect rapid promotions and tend to

change employers if they are not rapidly promoted and American employees tend to feel that three years without a significant promotion means that they have failed.

#### 3.3.4 Non-specialized Career Paths

Studies on the structure of Japanese companies have pinpointed two major organizational properties that distinguish a typical Japanese firm from Western organizations. These properties are the low degree of differentiation in occupational roles and high degree of rank differentiation (Abegglen, 1958; Dore, 1973; Yoshino, 1968; Ouchi, 1982).

Abegglen (1958) states that most Japanese firms do not search for specialized skills when recruiting new employees. The person with a broad, general education is sought and both the employer and employee assume that the company will provide the training. Besides the initial training, Japanese employees are submitted to what Drucker (1971) describes as continuous training. The training is given for the purpose of acquainting the Japanese employees with as many of the firm's work as possible. A Japanese employee keeps on training as a regular part of his job until he retires. He is trained not only in his job, but in other jobs at his job level. The on-the-job training by rotation promotes tremendous flexibility in the workforce, and also helps to develop the middle or upper managers into generalists with broader experience of the company's business and with the wider human contacts and friendships within

the company that are vital for generating consensus. The generalist is preferred over the specialists and the advantages are : (1) It enables the firm to reassign workers more freely and ; (2) Employees with wider experience within the firm tend to work toward the goals of the total firm rather than those of his own department.

In American firms, however, the typical career path is highly specialized at all levels. At operator levels "jobs must be divided into little pieces, each simple enough to be learned within a few days. These simple jobs become unbearably boring so that a worker with any options will quit at the first opportunity" (Ouchi 1982:51). Ouchi suggests specialization at managerial levels is even greater and criticized that it leads to organizations being run by a set of individuals with widely differing talents, skills, and objectives and these individuals can be strangers to one another.

### 3.3.5 Paternalism

The paternalistic treatment given to employees by managers in Japan originated in the strong tradition of "family". The term has a broader meaning in Japan and it relates to the workplace (Nakane 1972). The Japanese establishes his point of reference not in terms of who he is, but in terms of his group. In modern Japan, a company is conceived as a "family" and its employees are the household members with the employer as its head. Adams and Kobayashi (1969) suggest that because of this paternalistic attitude, the Japanese manager feels obligated to know every employee's name, to greet him



every morning, and to protect him. In return, the employee is expected to respect his boss, work hard for him, and give him his complete loyalty. The paternalistic attitude of the typical Japanese manager is illustrated by notable studies such as Adams and Kobayashi (1969) and Alston (1986) which revealed that the great majority of top managers in Japan are of the opinion that their corporate activities should contribute first to the satisfaction of their employees and second to the economic betterment of the company.

The shortcoming of these studies are the failure to stress that paternalistic treatment are generally extended only to lifetime employees and not to female or temporary workers. Another criticism is the almost complete reliance on management sources for information. Sethi et al. (1984:49) in criticizing the Japanese management system states that:

"the plight of temporary workers, even in such large organizations as Toyota, has been one of Japan's best-kept secrets".

They suggest that worker-related injuries are high and these workers are closely supervised in their "bachelor" dormitories and have little privacy or individual freedom. Despite these criticisms it is evident that paternalism is an important feature of the Japanese management system. A good example is Hitachi where the total expenditure on welfare was 8.5% of total labour costs as compared to 2.5% (including sick pay) for median British firm (Dore 1973:203).

### 3.3.6 Seniority-based Wage System

Abegglen (1958) and Dore (1973) are notable examples describing the practice of seniority - based wage system in Japanese factories. Under the seniority - based wage system, the remuneration of a worker is determined primarily on the basis of the number of years he has spent with the company, subject to age and level of education at the time of entry.

Sethi et al. (1984) suggest that the seniority - based wage system is the dominant practice in Japan and, although the difference between the incomes of younger and older workers is greater in larger enterprises, the prevalence of wage differentials according to age and length of service is found in all enterprises, regardless of size. The seniority - based system assumes that longer experience makes an employee more valuable and takes away the often destructive individual competition between employees and promotes a more harmonious group relationship in which each employee works for the benefit of the entire group believing that he will prosper with the group and that in due time he will acquire the rewards for long and faithful service. These studies, however may be criticized for asserting or implying that the seniority wage system is a traditional feature of Japanese organizations. Marsh and Mannari (1976:308) point out that :

"The seniority wage system, like other aspects of the paternalistic model, arose as a result of specific twentieth-century developments, and this sense is not a traditional Japanese pattern."

In contrast, the American organization favours individualism and personal achievement. Sethi et al. (1984:127) suggested that:

"the most important means for motivating employees is through a wage structure that rewards superior performance."

The foregoing review suggests that the wage structure in Japan is largely based on seniority in contrast to American system which wage structure is based on performance.

### 3.3.7 Analysis of unique features

Following the identification of the unique features (section 3.2.1 to 3.2.6), other studies have analysed which of these features contributes to successful management. Among them, the group-oriented tradition of the Japanese management which has been variously called "paternalism," "groupism," and "familyism," has been singled out as the characteristic contributing significantly to successful management. Ouchi and Jaeger (1978), Ouchi and Johnson (1978), Pascale and Athos (1981), Hatvancy and Pucik (1981), and Ouchi (1982) all observed that groupism can also be observed among well-managed American organizations such as IBM, Procter & Gamble, and Hewlett-Packard. Ouchi classified these organizations as "Type Z" which is the emergent American form of organization particularly suited to the United States. According to Ouchi, type Z organizations have certain group-oriented features similar to those



of Japanese organizations such as long term employment, slow promotion, wholistic concern for employees, and consensual decision-making.

However, other researchers like Sethi et al. (1984) have argued that many of the so-called examples of successful adaptation of Japanese management practices by American companies do not involve Japanese innovations but are simply excellent examples of good management techniques that were developed in the United States long before the Japanese management practices became fashionable.

It can be seen that researchers agree that group-oriented features contribute to successful management although some argue that these features are hardly unique to Japanese management system. Their findings substantiate the importance of human aspects and cohesive groups in successful management practices.

### 3.3.8 Studies on specific industries

Some recent studies on comparative U.S. - Japanese management system provide useful findings on the weaknesses and strengths of the U.S. - Japanese management systems in specific industries. Hayes (1981) and Wheelwright (1981) argue that emphasis on the basics of manufacturing processes is a key factor contributing to the success of Japanese manufacturing companies. Abernathy (1978) in his investigations into innovation, productivity, and process change in the automobile industry suggests that too much attention may have been given to radical innovation in the United States, at a time

when its position in crucial international markets required success in high-volume established products; Japanese success in applying technology to improve major products in established industries like automobiles, cameras, consumer electronics, and steel is the lesson that the United States should learn.

In a later study, Abernathy et al. (1983) in comparing U.S. and Japanese automobile companies, point out the centrality of production strategy as contributing to the success of Japanese automobile firms. They quote Japanese examples such as the highly automated and integrated manufacturing systems, "just in time" form of inventory control as suggestions of superior practices.

These studies point to the importance of considering differences among the various industrial sectors. The heavy industry sector such as ship-building and construction sector may find that highly automated and integrated systems not feasible or "just in time" form of inventory control relatively unimportant. For example it would be nearly impossible to have an automated production line producing or repairing ships.

### 3.3.9 Summary

The literature generally confirms the consistent nature of these features of Japanese management systems and highlights the extent to which they differ from U.S. systems. Having identified these features, it is thus possible to address the question of their

transferability to industry in Singapore. These features are considered further in chapter five in connection with the development of questionnaire and interview forms.

### 3.3.10 Limitations

One limitation of comparative studies which attempt to distinguish the unique features of Japanese management systems from the U.S. management systems is that they tend to view Japanese and U.S. management systems as two distinct systems with too little emphasis given to any analysis of the environmental factors and individual contingencies which may affect the particular management system under study. Hayes (1981) and Wheelwright (1981) are examples of such studies. Both ignore the possible effects of environmental factors, but focus solely on how the Japanese manage their manufacturing functions.

Other limitations relate to the absence of rigorous methodologies and lack of empirical data. Some of the studies were based on casual observation of a few U.S. and Japanese firms (for example Ouchi, 1982) or literature review (for example Sethi et al., 1984; and Alston 1986) and are therefore generally inadequate for an accurate comparison of the two management systems. The study by Ouchi (1982), in particular, lacks empirical data: few interviews were conducted and even these interviews were not conducted by Ouchi himself. It is apparent that the study by Ouchi is intended to be a very readable article rather than a detailed analysis based on an extensive research.



Yet another limitation is that most of these studies, for example Dore (1973), Abernathy (1978) and Abernathy et al. (1983), are restricted to only one industry and comparisons involving various industrial sectors are very rare. Even studies like Abegglen (1958) and Ouchi (1982) which do involve different industries do not comment greatly on the possible differences or similarity among them. In spite of these limitations, these comparative studies do, at least, provide a framework in terms of the various unique features for the comparison of U.S. and Japanese management systems. They represent an essential starting point for any study comparing the transferability of either system.

#### 3.4 Studies contributing to a contingency theory

Recent empirical studies on comparative U.S. - Japanese management systems contributing to contingency theory have as their objective the validation of contingency theories of organizational structure in the Japanese industrial environment. Marsh and Mannari (1976) find that the Japanese social variables such as the preference for paternalism, company housing, participation in company activities, company identification, and lifetime commitment have less causal impact on performance than more universal social organizational variables such as employee status in the company, sex, job satisfaction, and knowledge of organization. They suggest that performance in Japanese firms has the same determinants as demonstrated by research on Western firms.

In another study, Marsh and Mannari (1981) find that technology emerges as a more significant determinant of organizational structure than size. They conclude from this study that culture is not an appropriate explanation. They propose that the recurrence of the same systematic relationships between properties of organizations in different societies suggests the cross-cultural invariance of these relationships. Marsh and Mannari (1981) further suggest that if culture means patterns that are relatively constant within a society, then culture cannot explain the fact that organizational characteristics such as centralization and span of control vary significantly among factories within Japan.

Tracy and Azumi (1976) in their study of Japanese factories find that contextual factors, defined as plant size and task variability resulting from unstable relationships between the organization and its environment, are related to automaticity and formalization in the same ways as hypothesized for Western organizations. They conclude in the same way as Marsh and Mannari (1976) that relationships between context and structure may remain relatively stable across cultures.

#### 3.4.1 Limitations

One major limitation is that the arguments advanced by these studies to reject culture as an explanatory variable could be misleading. The discovery of the same systematic relationships in different societies is not adequate for drawing conclusions regarding the

absolute levels of the observed variables under consideration since these absolute levels may be quite different. In addition, culture may not be excluded in a contingency framework as explaining significant variance in organizational dimensions such as centralization and span of control among Japanese factories, since such variance could be a result of culture-based contextual factors. Child (1981:320) cautions against this limitation and states :

"Even within single multinational organizations, functional equivalents can be found that are apparently adapted to different cultural settings... explanation in terms of contingency is unlikely to be sufficient."

Also, studies such as Marsh and Mannari (1981) and Tracy and Azumi (1976) do not consider the relationship of structure to organizational effectiveness outcomes. The dimensions of organizational structure such as technology and size may be related to organizational effectiveness in very different ways in the United States and Japan.

Another major criticism is that proponents of contingency thesis use concepts and measurements that can remove all societal or cultural dimensions from organizations and their structures in the process of testing for national differences. Child (1981:319) states :

"The types of measurement used by contingency theorists are not likely to be highly sensitive to cultural effects in that they focus upon highly formalistic, and generally broad, features of organizational structure."



Thus, the contingency theory can be challenged by the argument that it ignores cultural effects and uses measurements which screen out potentially culture-related variation.

### 3.5 Implications for this research

Most comparative U.S. - Japanese management studies have been carried out in the United States and Japan. Studies distinguishing unique features of Japanese management from U.S. management focused mainly on only one or two features. Other studies focused mainly on the validation of contingency theories of organizational structure in the Japanese industrial environment. The main objective of this research differs from previous studies as it examines the transferability of U.S. and Japanese management systems to a third country (Singapore). It also examines the problems encountered by each individual feature of U.S. and Japanese management systems in Singapore. Therefore this study is more involved with the unique features distinguishing U.S. and Japanese management rather than the validation of contingency theories. Hence, the unique features identified in this chapter are used to provide a basis for comparing the transferability of U.S. and Japanese management systems to Singapore.

### 3.6 Conclusions

This chapter examines the contributions and limitations of previous studies relating to comparative U.S. and Japanese management systems. These studies have shown the Japanese management system to be significantly different from the U.S. management system. The review of literature also shows that no previous comparative studies have been carried out to examine the transferability of U.S. and Japanese management systems when applied simultaneously into another country. Based on the findings of previous studies, the predominant characteristics of Japanese management system which are significantly different from the U.S. management system are identified. These unique characteristics will be taken into consideration during the development of the questionnaires and interview forms so that their transferability could also be examined.

The discussions in this chapter also reinforce the discussions presented in section 2.3 regarding the difficulty of defining culture precisely and the determination of the extent of its influence. This difficulty is dealt with in section 5.5 using Kelley - Worthley's (1981) design to isolate culture. Other limitations are that the findings of many studies were based on casual observations of too few U.S. and Japanese firms which may lead to inadequate and inaccurate conclusions. In addition, the impact of the different industrial sectors is not examined, for example, whether there is any significant difference between

electronic industry and shipbuilding industry in the comparison of U.S. and Japanese management systems. Those limitations being identified in this chapter will be taken into consideration in the research design for this study in section 5.5.

One of the major problems confronting comparative management researchers is the absence of appropriate, well designed careful methodologies. This problem is discussed in section 2.3 and many previous studies discussed in this chapter were based on casual observation of a few U.S. and Japanese companies, rather than the application of a rigorous methodology. A methodological review (chapter 4) is therefore necessary to help in the formulation of an appropriate research model which will enable data to be systematically gathered and analysed.



METHODOLOGICAL REVIEW OF COMPARATIVE MANAGEMENT RESEARCH

4.1 Methodological Review

Methodological difficulties have been identified as one of the major problems confronting comparative management researches in the preceding two chapters. This chapter gives a methodological review of various comparative management models. The importance of using the correct methodology is also stressed by Nath (1968) and Negandhi (1974). Nath (1968) in a methodological review of cross-cultural management research made the criticism that most cross-cultural management studies have been based on impressions or uncontrolled interviews. As such, they have provided some useful insights but failed to provide rigorous comparative data. In another article Negandhi (1974) emphasized that conducting research in cross-cultural management should be conceptually sound and methodologically correct.

Several methodological models have been developed especially for comparative management research. In this comparative management research the model chosen should be one which takes managerial functions into account, since these are the broad activities in which managers are engaged. In addition, the model should allow for the gathering of empirical data concerning managerial effectiveness to gauge the impact of the management system on the organization. Negandhi (1974:63) has emphasized the importance of management

effectiveness and has noted:

"As one can see from comparative management studies that 'hard' data on management effectiveness is very meagre. One can evade this issue of not relating managerial attitudes, behaviour and effectiveness by not including effectiveness criteria in the research design or model, but one cannot escape the realities of the situation. Organizations come into being with some purpose: whether private or public, profit-making or non-profit making, an organization does have a goal. Therefore, it is the achievement of this goal which must be linked to the other variables within and outside the organization. Most comparative studies choose not to do this."

The study of the effectiveness of U.S. and Japanese management systems and their transferability to manufacturing industry in Singapore is one of the main objectives of this comparative U.S. - Japanese management research. The inclusion of the effectiveness criteria is therefore necessary. Schollhammer (1969) in a particularly relevant review argues that a standardized and objective measure should be used for evaluating observed phenomena in comparative management and suggests that firm productivity (input and output relationships) could be used as a major indicator of firm efficiency. In Singapore, the National Productivity Board also suggests that firm productivity should be used as an indicator for comparing the performance of companies in the manufacturing sector (Cheong and Yap, 1986:15). Hence in this research, firm productivity is also considered as the most appropriate effectiveness criteria since all the firms involved in this research belong to the manufacturing sector and data in terms of labour and capital productivity will provide quantitative comparison between

the firms and industrial sectors used in the study. The factors chosen for determining firm productivity are described in section 8.3.

According to Schollhammer (1969), comparative management research has been approached in four major orientations. These are the (1) socio-economic; (2) ecological; (3) behavioural; and (4) eclectic-empirical approaches to comparative management. These orientations are frameworks for the detection, identification and evaluation of similarities and differences in managerial problems in different countries. Each of these orientations deals with the methodological problems of comparative management studies in a different way.

#### 4.2 Socio - Economic Approach

The socio-economic approach to comparative management is designed to investigate the interrelationship between management's action and economic change. The premise of the approach is that management is the most critical factor for unlocking the forces of economic achievement. The emphasis of the socio-economic approach is the analysis of the relative intensity of management utilization as well as the social determinants of managerial activity in an effort to isolate those management - related factors which enhance or inhibit a country's economic status.

Harbison and Myer's Management in the Industrial World (1959) was the first comprehensive socio-economic comparative management study.



The authors developed a research model which enabled them to look at management from two points of view: first, an analysis of managerial activities or tasks, and second, an analysis of the managers themselves. Their proposal for an analysis of the managers themselves has three perspectives: management as an economic resource, management as a system of authority relationships, and management as a class of elite. This model has been used as a guide for describing and analysing the management situation in a dozen different countries. The results of these studies confirm broadly Harbison and Myers' hypothesis that the relative level of economic activity and achievement is a function of socio-economic conditions which manifest themselves in the relative intensity of management utilization, the peculiarities of acquisition, exercise and the maintenance of managerial authority, and management's relative prestige and power in society. Others like McClland (1961) and Hagen (1962) also make use of the socio-economic approach.

The chief advantage of this approach is that it analytically examines those economic conditions and sociological norms which govern or strongly influence managerial behaviour patterns. Schollhammer (1969) commented critically that the results of these studies are frequently ambiguous and not prescriptive and that the macro-orientation of such studies does pay equal attention to individual differences in managerial behaviour or interfirm differences in a given society. The strongest criticism is however, the rather limited focus of this approach since it concentrates mainly on environmental differences which are of most interest to

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sociologists and cultural anthropologists instead of the broad spectrum of environmental differences. This last drawback has led to the development of the ecological approach which is the second major orientation of comparative management theory.

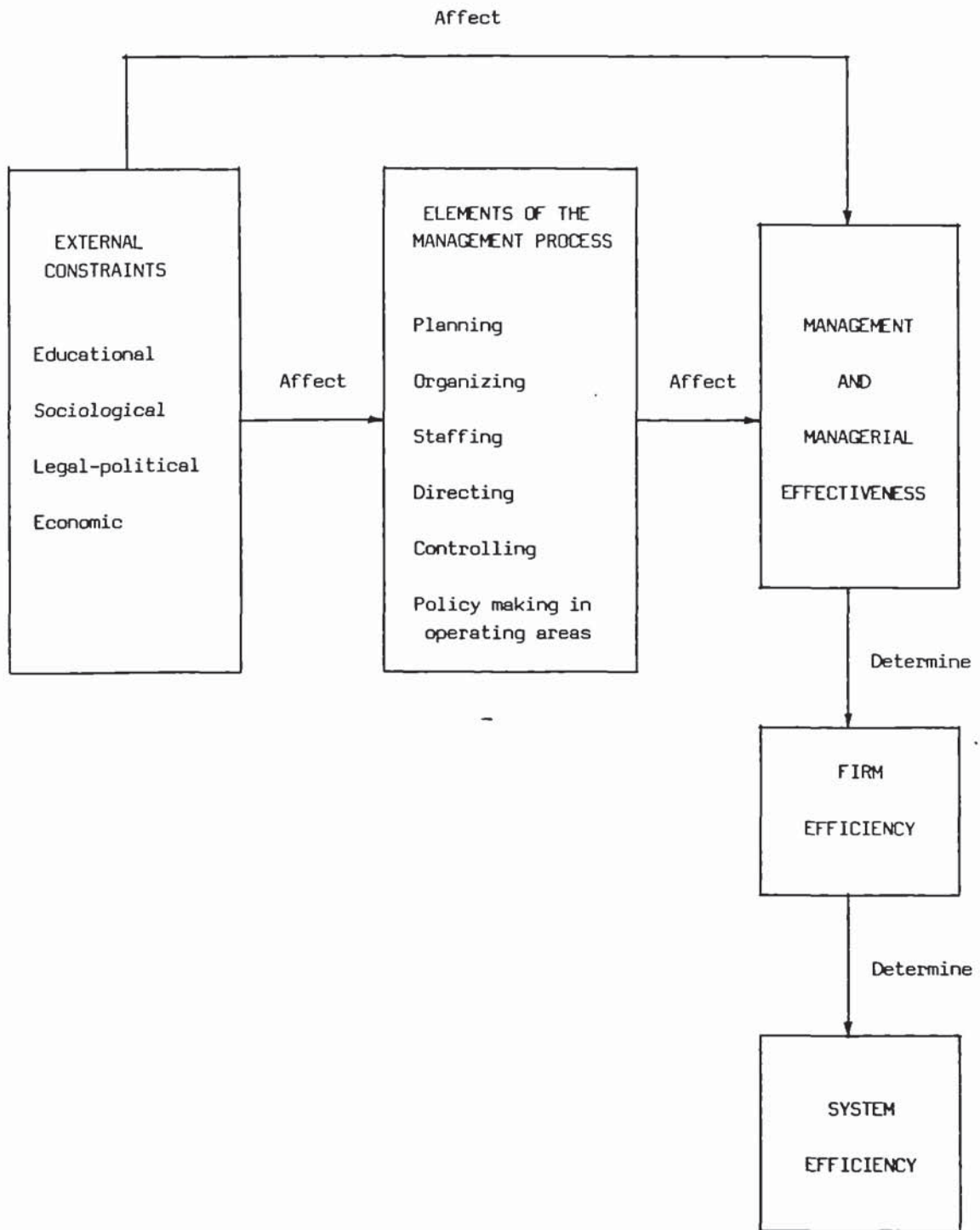
#### 4.3 Ecological Approach

The ecological approach focuses on the interdependencies and causal relationships between a firm's internal and external environments. This approach to comparative management attempts to isolate those external environmental variables to which similarities or differences in managerial effectiveness in different countries can be attributed. The nature of this approach makes it necessary to distinguish between various ecological components such as a country's social, political, and economic characteristics which are perceived as constraints on managerial effectiveness.

Farmer and Richman (1964) first developed and tested the ecological approach to comparative management. Their major hypotheses are that : (1) managerial effectiveness is a function of various external environment constraints; (2) firm efficiency is a function of managerial effectiveness; and (3) aggregate economic efficiency is a function of the efficiency of the individual economic units. In addition, Farmer and Richman (1965) developed the theoretical model depicted in figure 1 for comparative management research. The model assumes that: (1) system and firm efficiency are determined by management effectiveness; (2) Management effectiveness is a function of management process and

FIGURE 1

FARMER-RICHMAN (1965:25) MODEL





external constraints; and (3) management process is a function of external constraints. Other scholars employing the ecological approach include Blough (1966), Hall (1959), Gonzales and McMillan (1961), Oberg (1963), and McCann (1964).

The ecological approach has three possible weaknesses. First, the approach tends to regard the individual enterprise as being a passive creature under the control of environment. Schollhammer (1969) criticized that there is an over emphasis on the necessity for environmental adaptation and not enough attention is paid to the fact that management may choose to act in defiance of the external constraints. Second, the ecological orientation cannot cope with the fact that almost all environmental conditions are inter-related and it is almost impossible to determine the precise impact of a given environmental constraint category on internal management practices and management effectiveness. Third, the approach fails to distinguish between those external "constraints" which management may be able to influence via its strategic actions and those which it cannot - at least within a reasonable time period. It also appears to mix up cultural, social, institutional and economic factors without a clear theoretical rationale for so doing.

#### 4.4 Behavioural Approach

According to Schollhammer (1969), using a behavioural approach means the formulation of concepts and explanations about human behaviour

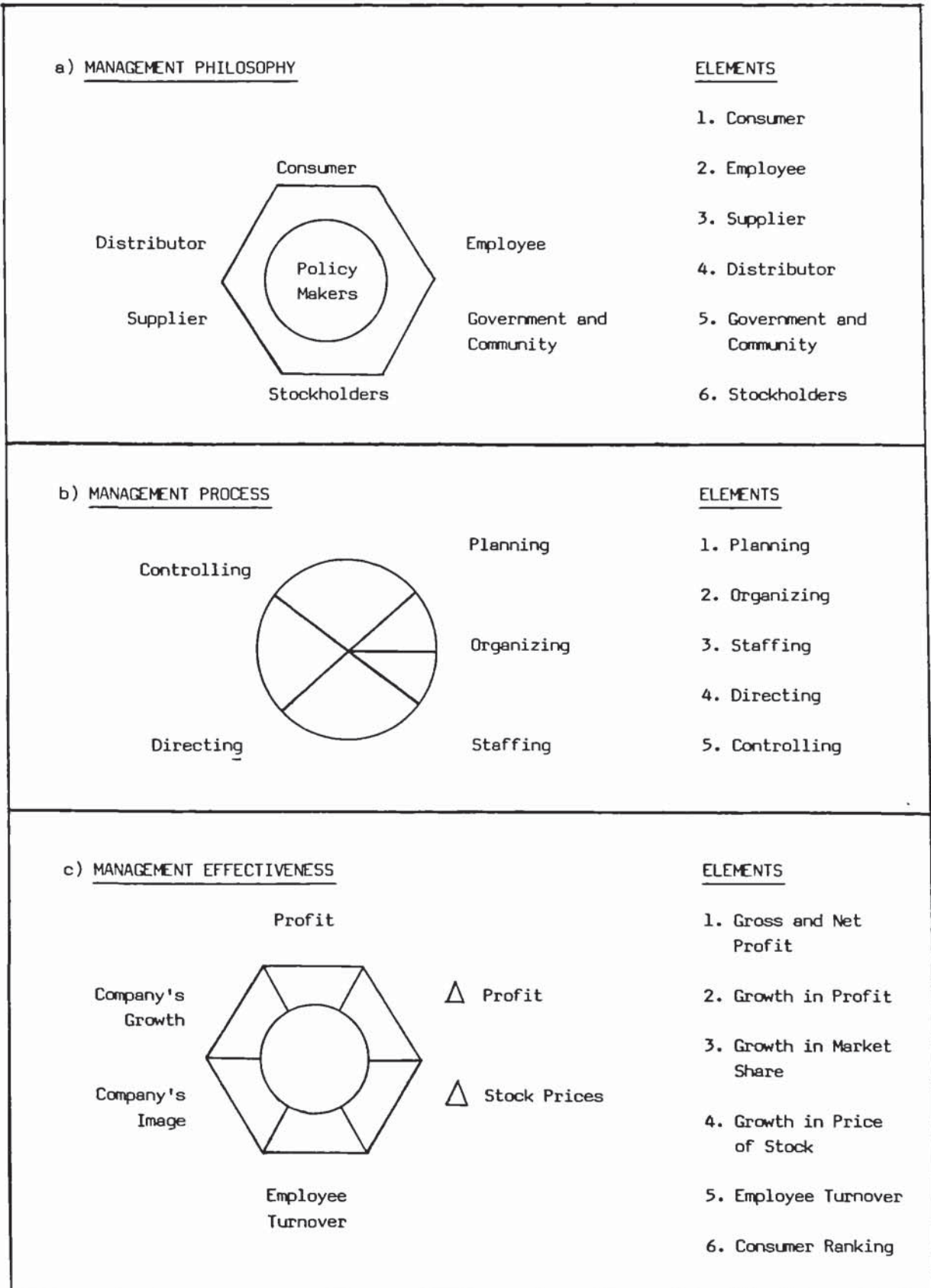
in dynamic systems of interdependency, and the use of scientific methods for the elucidation of information and data analysis pertaining to casual relationships of interpersonal phenomena. At least two comparative behavioural research models are currently in use.

Bass (1967) has developed a model utilizing a set of ten case exercises on management and organizational psychology. These exercises centred on specific managerial problems or behavioural issues such as supervision, organization planning, communication, industrial bargaining, managers' personal life goals, or on the job of a manager as a whole rather than on specific instances. All exercises require either personal or group decisions, and Bass's empirical, cross-cultural research focuses on the decision-making process and the behavioural peculiarities which it reveals. In addition, the Bass approach has been utilized by European and Latin American management development programmes. In these projects, trained observers register how executives tackle the simulation exercises, what decisions they reach, and how they modify their decisions.

The second model is that of Negandhi-Prasad (1971) which was developed from the Negandhi-Estafen (1965) model. The Negandhi and Estafen's (1965) model depicted in figure 2 focuses on the managerial functions, indicators of managerial effectiveness, and management philosophy of the organization. Their model consists of three major building blocks: (a) the managerial functions, i.e., planning, organizing, staffing, controlling, and direction and

FIGURE 2

NEGANDHI-ESTAFEN (1965:316) MODEL





leadership; (b) managerial effectiveness, expressed by such indicators as profitability, change in profits and sales, employee morale, and the public image of the company; (c) management philosophy, which Negandhi and Estafen (1965) define "as the expressed and implied attitude or relationships of a firm with some of its external and internal agents such as :- consumers; company's involvement with the community ; company's relationship with local, state and federal governments; company's attitude and relationship with unions and union leaders; and the company's relationship with suppliers and distributors".

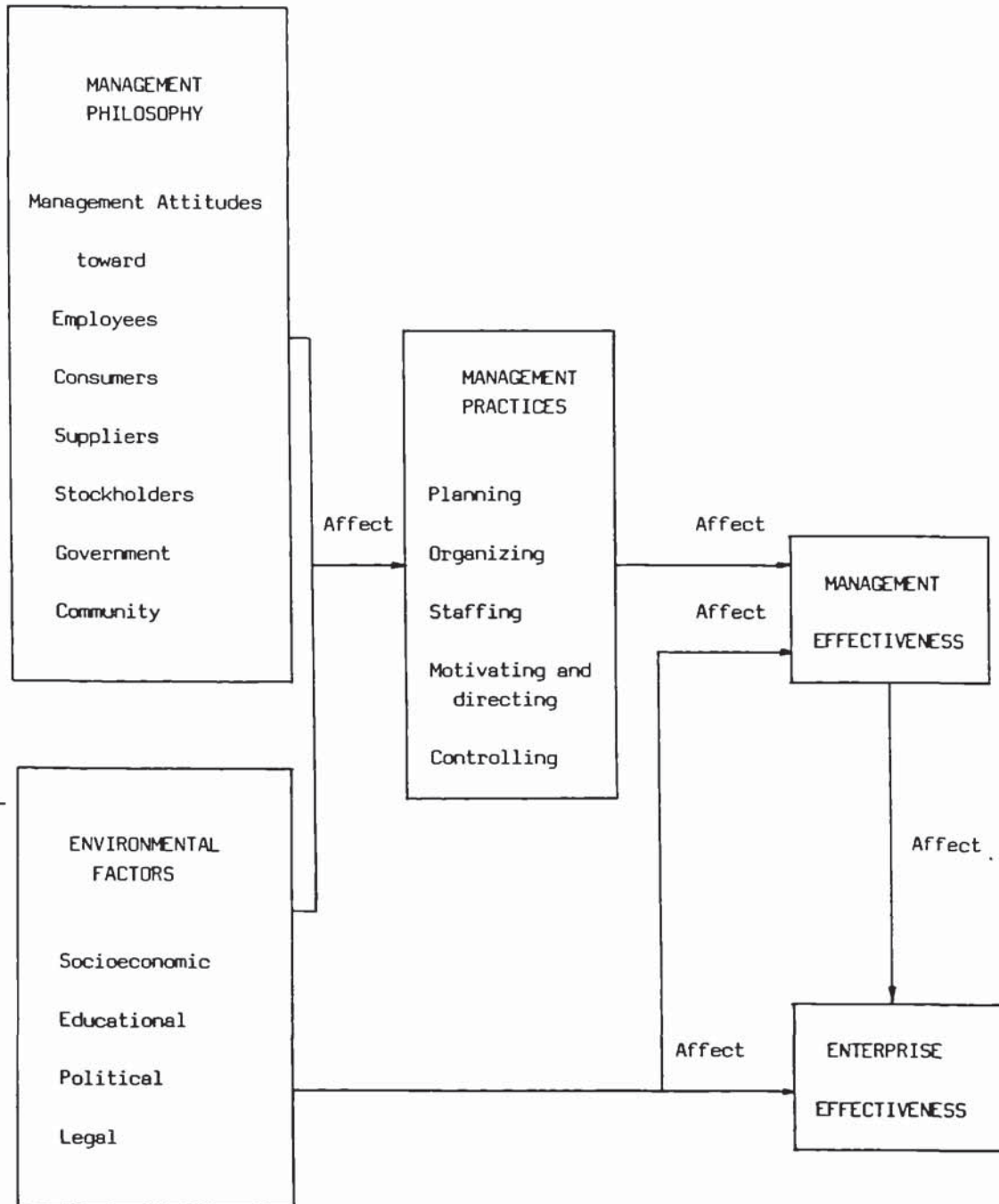
The basic idea expressed in this model is that managerial effectiveness is a function of managerial practices, which, in turn, are a pattern of the management's behavioural characteristics which manifest themselves in management philosophies and policies. In a complex field such as comparative management, Negandhi - Estafen's behavioural approach enjoys some advantages :-

- (a) the concentration on only a few largely controllable variables facilitates this model's use for empirical investigation, and
- (b) the concentration on management activities and managerial behaviour within individual firms, i.e., on strictly micro-economic aspects in contrast to the other strongly macro-oriented approaches.

Negandhi and Prasad's (1971) theoretical model depicted in figure 3

FIGURE 3

NEGANDHI-PRASAD (1971:23) MODEL



was developed as an expansion of the Negandhi and Estafen's (1965) model and is based on the following assumptions :

(a) Enterprise effectiveness is a function of management philosophy, management practices and management effectiveness, and external environmental conditions.

(b) Management effectiveness is also a function of management philosophy, management practices, and external environmental conditions.

(c) Management practices are functions of management philosophy and the external environmental conditions.

The study visualizes management philosophy and external environmental conditions as independent variables; management practices as intervening variables; management effectiveness as dependent variable; and enterprise effectiveness as the end-result variable.

The advantage of the models advocating an essentially behavioural approach to comparative management is the direct and explicit focus on managerial behaviour and attitudes in different environmental settings. This advantage is exploited by the research design and research model (figure 5) used in this study. Another advantage is that we have at our disposal a well developed methodology for empirical investigation and a large body of knowledge from the behavioural school of management which gives the behavioural



approach to comparative management a head start. However, Schollhammer (1969) cautioned that one must also recognize the dangers of: (1) a possible overemphasis of socio-psychological relationships, and (2) the generation of a large amount of information on uniformities or differences in managerial behaviour in various countries may not add up to a consistent, comprehensive body of knowledge of its own called "comparative management."

#### 4.5 Eclectic - Empirical Approach

The largest number of comparative management studies have been of the eclectic-empirical orientation. They are eclectic in a sense that no attempt is made to develop and test a comprehensive management concept, but rather the author of these studies adopts a framework which facilitates the practical investigation of certain facets of this broad field. The majority of analyses in this approach have been empirical and have described aspects of managerial attitudes and practices in various countries. Since comparative management is a rather new and developing discipline, this approach has the advantage of leading relatively quickly to a stock of empirically derived knowledge to which many researchers can contribute and from which generalizations can be drawn to provide guidelines for further research. The drawback of this approach is that most of these studies focus on different features which impair comparability.

The prototype of the eclectic-empirical approach is Granick's book

(1962) The European Executive; this was an investigation and analysis of management's role in Great Britain, France, Belgium, and Germany. Granick clearly established the remarkable differences in the business patterns among these four countries as well as the managerial differences between Western Europe and the United States. A comparison of Soviet and American management was also carried out by Granick (1960). Other contributions using the eclectic-empirical approach have been made by Richman (1965), Lauterbach (1966), Geiter and Armstrong (1964), Hartmann (1959), Cochran and Reina (1962), and Yusif (1962). A good example of comparative U.S. - Japanese study using this approach is Cole (1979) which provide an in-depth comparison of employment practices.

#### 4.6 Conclusions

The methodological review shows that there is a diversity of research orientations and research models in the field of comparative management. Every research orientation and model has certain advantages and disadvantages. The review also shows that it is important that the methodology used for this research should provide rigorous comparative data and include management effectiveness criteria. Schollhammer (1969) in analyzing the four major orientations suggests that there are substantial similarities among them in spite of their differences in focus and emphasis. For example, Kelley and Worthley (1981:164) suggest Farmer-Richman (1965) and Negandhi-Prasad (1971) as the two more important research models. A close examination of these models (figures 1 and 3) reveals their similarity. The Negandhi-Prasad model identifies

basically the same environmental factors as the Farmer-Richman (1965) model the a major difference is that it recognizes management philosophy as an independent variable. Another major difference is that the Negandhi-Prasad model posits a direct influence of environmental variables on enterprise effectiveness.

From the foregoing discussions, it can be argued that there is a lack of any clear boundary between the four major orientations. It is therefore appropriate that a good combination of the various orientations and models be selected for the formulation of the correct research model for this research. The strict adherence to any single orientation or any model may not be the best approach for this research. Since this research is a comparative study of the U.S. and Japanese management systems and their transferability to manufacturing industry in Singapore, the contributions, methodological difficulties and the limitations of previous related studies discussed in chapters two and three need to be taken into consideration for the formulation of the research methodology. Chapter five describes the formulation of the research methodology for this study drawing on the discussions presented in chapter two, three and four.



## CHAPTER 5

### RESEARCH METHODOLOGY

#### 5.1 Formulation of the Research Model

The literature review in chapter two and three shows that methodology constitutes a major problem confronting studies relating to comparative U.S. - Japanese management. A theoretical research model needs to be formulated as a first step in addressing the problem of methodological difficulty. In section 4.1, the importance of the inclusion of effectiveness criteria and the need for rigorous comparative data for evaluating the observed phenomena were discussed. In chapter three, one of the limitations of comparative studies on the unique features of U.S. and Japanese management system was shown to be that too little emphasis is given to the impact of environmental factors. This limitation is a major problem as one of the research objectives is to determine which features of the U.S. and Japanese management systems are transferable to manufacturing industry in Singapore. By analyzing the research models presented in the methodological review in chapter four, it is evident that the Negandhi - Prasad (1971) research model can be adapted for this research.

The Negandhi-Prasad model is an improvement over the Farmer-Richman (1965) model. It differs from Farmer-Richman (1965) model by treating management philosophy as an independent variable and reduces the overemphasis on the necessity for environmental adaptation by considering the fact that management may choose to

act in defiance of certain external constraints. The Negandhi-Prasad model identifies basically the same external environmental factors as the Farmer-Richman model but recognizes management philosophy as an independent variable. Both these models include effectiveness criteria and give emphasis to the impact of environmental factors on management practices. The model adapted for this research is depicted in figure 5. It adopts the following approaches tested and developed by Negandhi - Prasad (1971) research model :

- 1) managerial effectiveness is a function of the various external environmental constraints.
- 2) managerial effectiveness is a function of the managerial practices. The managerial practices in turn are a function of the management's behavioural characteristics which manifest themselves in management philosophies.

The model views management philosophy and the external environmental conditions as independent variables; management practices as intervening variables; management effectiveness as dependent variable; and firm productivity as the end-result variable. An improvement over the Negandhi-Prasad model is that firm productivity which is the most appropriate effectiveness criteria for comparing manufacturing industry in Singapore is used by the model to provide "hard" data on the end-result variable. The questionnaire survey and interview analysis used in conjunction with the model also provide rigorous comparative data for evaluating the observed phenomena.

Figure 4

Kelley - Worthley (1981) Research Design for Isolation of Culture

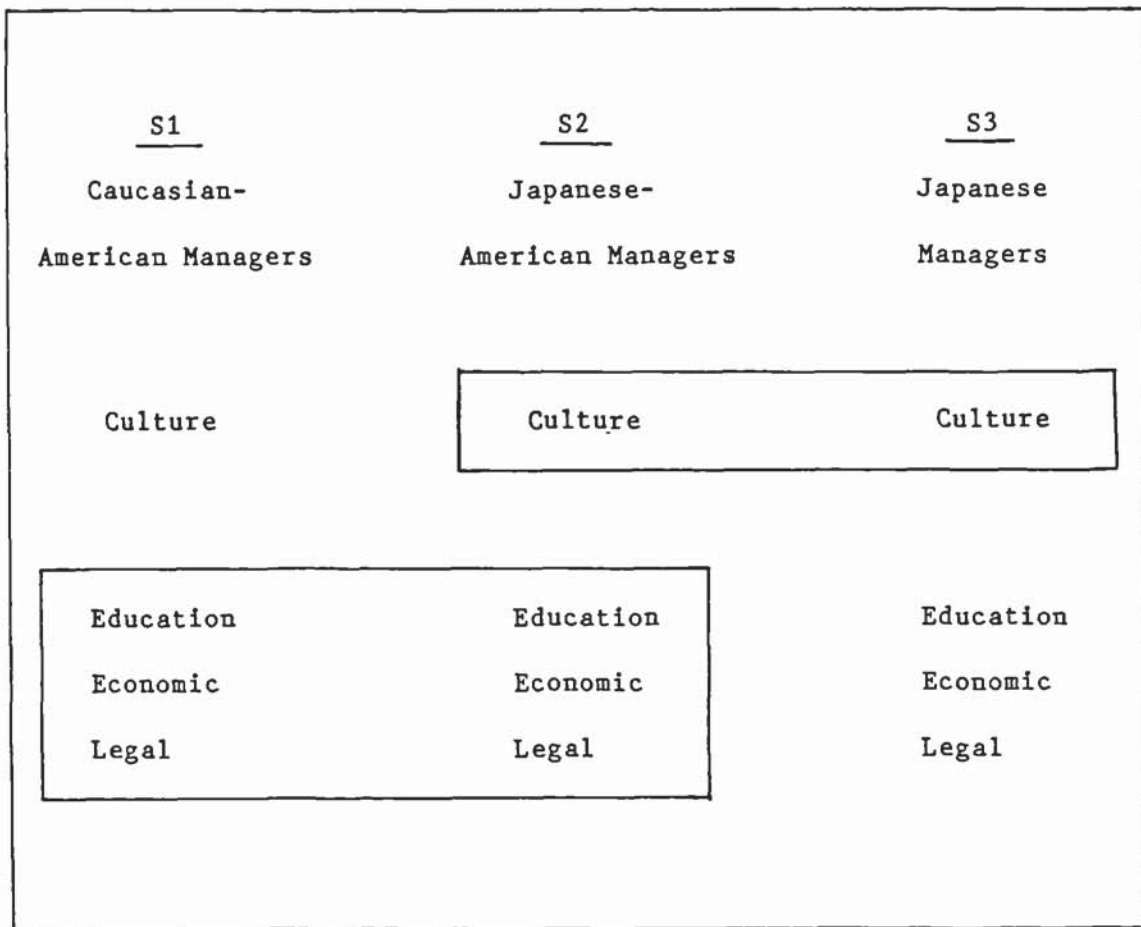
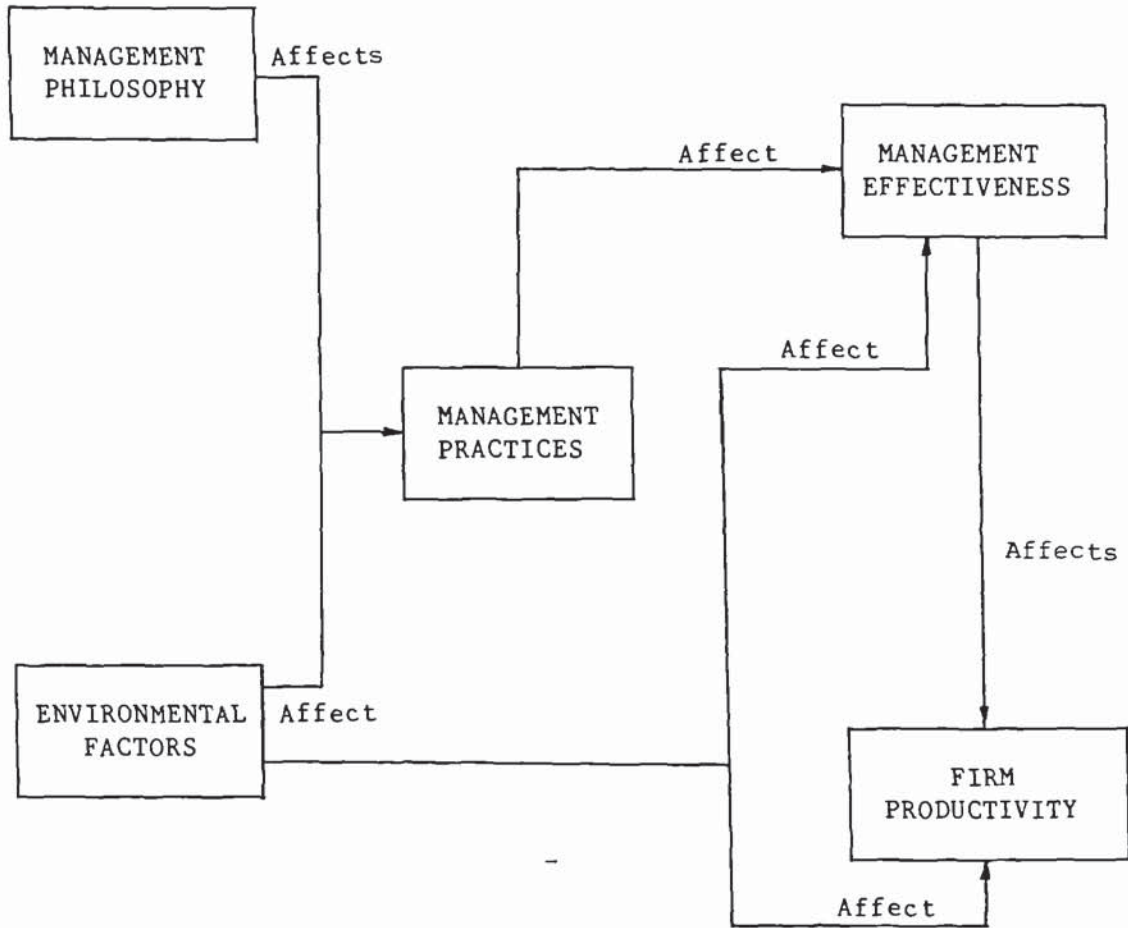




FIGURE 5

RESEARCH MODEL



The research model also adapts the Kelley-Worthley (1981) model depicted in figure 4 for the isolation of culture for the comparison of different management philosophies under the same operating environment. This particular part of the research focuses on the U.S. and Japanese subsidiaries which have different management philosophies but operating in the same environment in Singapore (section 5.5). This again is another improvement over the previous research model.

The definitions for the management variables used by the research model (figure 5) are as follows :-

#### Environmental conditions

These include socio-economic, educational, political, legal, and cultural factors which impinge upon the firm's internal operations, but are external to the firm (Farmer and Richman 1964). Negandhi (1973) and Negandhi - Prasad (1971) include these factors in their models to ascertain the impact of environmental and cultural variables on management practices and effectiveness.

#### Management Effectiveness

The definition includes the following factors used for ascertaining the degree of management effectiveness as suggested by Negandhi (1973:129):

- (1) Management ability to attract and retain high-level manpower.
- (2) Employee morale and satisfaction in work.
- (3) Employee turnover and absenteeism.

- (4) Interpersonal relationships in organizational settings.
- (5) Subsystem behavioural relationships (Departmental relationships).
- (6) The executive's perception of the firm's overall objectives.
- (7) Utilization of high-level manpower.
- (8) Organizational effectiveness in adapting to the external environments.

#### Management Functions/Practices

Management functions or management practices (this term was used by Negandhi, 1973) consists of the following elements which are to be investigated: (1) Planning function; (2) Organizational function; (3) Staffing function; (4) Direction and Leadership function; and (5) Control function which consists of (a) Control techniques used for different areas, i.e., finance, production, marketing, etc.; (b) Types of control standards; (c) Information feedback systems and procedures for corrective actions.

#### Management Philosophy

This is defined as an implied and expressed attitude of the firm toward employees. The elements of management philosophy to be investigated consist of group-oriented/individualistic features of Japanese and U.S. management systems which were identified in chapter three.

#### Firm Productivity

The factors chosen for investigation under firm productivity are



labour productivity and capital productivity since all the firms involved in the research belong to the manufacturing sector. The importance of determining firm productivity in this research was discussed in section 4.1. The definitions of the factors and the calculations used for determining firm productivity are given in section 8.3.1.

## 5.2 Research Instruments

Questionnaire (to provide statistical data) and interview analyses (to provide descriptive data) were employed in this research. Questionnaires were designed to obtain perceptual data on environmental conditions, management philosophy, management functions/practices, management effectiveness. Certain information such as lay-offs policies, opinions on the average Singaporean workers, management-labour relationships, etc., cannot be fully obtained by the questionnaires. The interview analysis was used to supplement the questionnaire survey by obtaining such information and data on firm productivity and breakdown of employment of the subsidiaries. In addition, the interview data was also used to cross-check the validity of the questionnaire data.

Questionnaires to Japanese parent companies and subsidiaries were given in English language with Japanese translation. Questionnaires to U.S. parent companies and subsidiaries were given in English language. A series of interviews with U.S. and Japanese subsidiaries in Singapore was also conducted to gather field data

relating to the management variables under consideration.

Nath (1968) in his remarks on the problems of instrument and testing, mentioned that the poor quality of most cross-cultural research is, in large measure, due to the failure to ensure cross-cultural and cross-linguistic comparability of research instruments. This is especially the case as far as U.S. and Japan are concerned. There are certain words whose meanings differ on direct translation. For example, the Japanese concept "manneri" (or Chinese equivalent using "kanji") in direct translation means "ritualism" in English. The concept actually means "mannerism" in English. This problem was also mentioned in Dore's (1973:240) study. To avoid this problem, the questionnaires developed were sent to a sample of randomly selected firms in each group, the response was evaluated to justify the validity of translation. This pilot study identified some of the difficult words and terminologies, and indicated the necessary changes in the questionnaires. Other improvements to the questionnaires and interview forms were also made based on the feedback obtained during the pilot study.

### 5.3 Development of the questionnaires

Questionnaires were developed for the study of environmental conditions, management effectiveness, management function/practices, and management philosophy. All questionnaires were designed to ascertain the respondent's perceptions of each of the 10 indicators of the four management variables under study; environmental conditions, management philosophy, management function/practices and

management effectiveness. The device employed in this pursuit was a set of scales ranked 1 to 5 with code 1 representing "least" and code 5 representing "most" for each indicator. Each respondent was requested to rank each indicator according to the relative perception he or she had of that management variable. There are two main reasons for using perceptual measures for this study. First, it is not possible to obtain all data by observation or interviews due to the large number of companies which are located in the three countries. Second, the perceptions of U.S. and Japanese managers regarding the adaptability their respective management system are of vital importance since it is these (favourable) perceptions which may lead to more investments in Singapore. The limitation is that perceptions may depend upon the respondent's experience and belief rather than more objective criteria. However, this limitation is minimized by cross-validation with reports in the concluding chapter and other evidence such as layoffs/retrrenchments by the company concerned.

#### Questionnaire 1 : Environmental conditions

The objective of this questionnaire is to measure the impact of environmental variables. The respondent was requested to rank the impact of each indicator on a scale of 1 to 5.

The Japanese management system has certain dominant and clearly identifiable traits that can be used to compare with the U.S. management system. Farmer and Richman (1964:56) have cautioned



against the "black box" approach to comparative management studies. Their concern regarding the effects of environmental variables on comparative management studies is shared by many other researchers. Negandhi and Estafen (1965), Estafen (1971), Negandhi and Prasad (1971), Kelley and Worthley (1981) are among those researchers who emphasized the importance of environmental country variables, such as socio-cultural, educational, political-legal, and economic factors as major determinants of management processes and effectiveness. Farmer and Richman (1965) also pointed out that the study of transferability of management from one environment to another necessarily faces a very complex set of important factors. Influencing the management systems under different environmental situations are a wide variety of external factors which the researcher can in no way control. These factors fall into four broad categories: socio-cultural, educational, political-legal, and economic. In another article, Child and Tayeb (1983) conclude that cultural, contingency and political economy variables are interactive and it is an error to disregard them in cross-national studies of organizations.

From the above review, the environmental country variables which have shaped and continued to influence U.S. and Japanese management practices have to be considered in the study of their transferability. Ten indicators were identified for the questionnaire for the purpose of studying the major external environmental factors identified by Farmer-Richman (1965) research model. Indicators 1, 2, and 3 are socio-cultural factors; indicators 4, 5, 6, and 7 are educational factors; indicators 9 is

an economic factor; and indicators 8 and 10 are political-legal factors.

#### Indicators 1 and 2

Kast and Rosenzweig (1976) attribute the fundamental precepts of American business to northwestern Europe because United States is largely populated by descendants of northwestern European immigrants who brought their own customs and traditions and created an American new society that is only three centuries old. Although they acknowledge that there are differences in customs which occur in various sections of United States, Kast and Rosenzweig identify the basic American belief in the right of individual to choose his own vocation and work style. Long and Seo (1977) concur on the importance of European influence on North American culture stressing the importance of the European settlers' spread of their Protestant ethic.

The Statistical Abstract of the United States (U.S. Bureau of the Census, 1975:491) states that more than 78 percent of the businesses operating in the U.S. are individually owned and operated. The highly individualistic nature of the entrepreneurs is also seen by Raube (1958) as present within organizational structure as the result of job specialization. Kobayashi and Burke (1976) also view U.S. management system as characterized by an emphasis on individualism with active worker participation in business operations.

In contrast, the Japanese management system is strongly rooted in Japanese culture and tradition. Moore (1967) regards the collective and hierarchical social structure which had been encouraged and accepted for centuries as strongly conditioning the Japanese attitudes regarding social norms, government and work. Moore suggests that there is greater similarities in attitudes related to business between feudal and modern Japan than between modern Japan and Western-style capitalism. The fundamental influences on Japanese society were classified as: (1) kinship by birth/adoption, marriage or association; (2) hierarchy based on a father-son model; (3) a sharing of the protection provided by a deity or cult or by a common burial site.

These influences can be viewed as both interrelated and interdependent and as based on Japan's centuries of feudal tradition. According to Van Zandt (1970), one of the most unique behaviour characteristics of the Japanese in business as well as in social interactions is their loyalty which extends to government, company and social group as a projection of family relationships. According to Rohlen (1976), authority is absolute and greatly respected in Japanese corporation. The authority-based power is derived not so much from legal or contractual considerations, but is based primarily on customs and traditions.

The Japanese prefer to work as members of groups rather than individually. They readily identify with groups and subordinate their personal interests to the will of the whole group. Van Zandt



(1970) and Moore (1967) attribute this group consciousness to the early and pervasive group-orientation found throughout Japanese society which tended to take precedence over individual interest and values, with the resulting emphasis on serving the group through obedience to individuals in superior positions while maintaining a strict code of honour. They further suggest that the importance of respect in Japanese society is based on a concept of honour instead of the Western tradition of respecting those individuals deemed successful or outstanding in some endeavour. The group consciousness is also strengthened by the existence the "shame ethic." To the Japanese, the fear of ridicule is viewed as more to be avoided than the fines or external means of enforcing behavioural conformity accepted in Western societies (Longman Group, 1970). In summary, Americans place a strong emphasis on the concept of individualism while the Japanese prefer to work as members of groups rather than individually and shows great respect for person in authority. Based on the above review the first two indicators were formulated as :

1. Good attitudes toward person in authority
2. Tendency toward teamwork

Indicator 3 : Importance of wealth and material gain

Sirota and Greenwood (1971) in a survey which includes U.S. and Japanese workers concluded that Japanese workers are unique in that their desire for earnings opportunities are the highest. Indicator 3 investigates this proposition.

#### Indicators 4, 5, 6, and 7

The motivation for obtaining better education in the U.S. is not as high as in Japan. An average American will have many opportunities to advance his career although the American who attends a good university and receives a good first job is likely to be more successful than one who does not. However, in Japan, good university education is necessary for obtaining the all-important first position in a person's life-long career and most career opportunities are tied directly to the level of education. Japanese are motivated to do well in middle and high school because it provides an opportunity to be accepted in the more prestigious university (Pegels, 1984).

Comparing Japan to the U.S., the illiteracy rate in the United States is very much higher than that of Japan. Christopher (1984:72) states that illiteracy rate in the U.S. is as high as twenty percent but in Japan it is less than one percent. In addition, Vogel (1979) points out that almost forty percent of Japanese males have completed four-year colleges compared to about twenty percent in the U.S. Vogel comparing U.S. to Japan states that in the United States there is no federal agency to set standards of education and teachers must spend more time helping students of diverse cultural backgrounds. In Japan, standardized educational opportunities are given to students and uncompromising uniform standards of performance are required from them. According

to Vogel this makes it easier for Japanese work organization to later demand the same high standards of performance as that required in the schools.

After employment, Ballon (1969a) states that the training procedures for management personnel in major Japanese enterprises typically include an overview of the activities and functions of each individual department. This orientation period normally take five years, during which time the junior executive is expected to become familiar with all aspects of the firm's operation. At the end of the orientation period, a prospective manager is assigned to a specific department where he normally stays until retirement. Ballon (1969b) describes the unique feature of the Japanese corporate structure known familiarly as the "godfather". The relationship established between the senior employee or "godfather" figure and the younger trainee was shown to include advising, guiding and evaluating functions which extended to the personal life of the assigned junior worker. The young employee is thus provided assistance in his entry to the established group and this support in developing a harmonious relationship with fellow group members, an extremely critical provision in a management structure based on group decision-making. The result of the Japanese life-employment system coupled with the training provided by the Japanese corporation is the plentiful supply of skilled labour as compared to the United States. Pegels (1984:23) states that the supply of workers is drying up and Japanese industry may have to increase the transfer of its manufacturing facilities to foreign countries and do most of the engineering, product development, and planning in Japan.



Based on the above review the following indicators were formulated :

4. Literacy level of population
5. Availability of trained or skilled workers
6. Availability of other workers
7. Attitude toward education

Indicator 8 : Union-labour relationships

According to Allen (1965), unionization of industrial workers in Japan before second world war was almost non-existent. After the war, labour legislation was enacted to give the workers the right to organize, to bargain collectively with their employers, and to go on strike. The Japanese labour unions are quite different from their U.S. counterparts as the power of collective bargaining lies with the local company unions (Alston, 1986). These company unions are not trade unions and they are composed of all employees of varying trades that work for the company. The company unions want to cooperate with the management since the union's existence and prosperity are dependent on a single employer's success. Abegglen (1958) notes that Japan suffers only one-seventieth of the U.S. number of average man-hours lost due to strikes. Alston (1986) suggests that the strength of the Japanese economy lies partly in the good union-labour relationships. The management's perception of union-labour relationships is investigated by this indicator.

Indicator 9 : Rate of annual inflation

All firms studied in this research are American and Japanese multinational companies which have invested in Singapore by setting up manufacturing subsidiaries in Singapore. Tsurumi (1977:53) states in his book on multinational management that inflation tends to weaken the cost competitiveness of exports in international markets. Rutenberg (1982) also emphasizes the importance of taking inflation into consideration for the management of multinational companies. Almost all products from U.S. and Japanese subsidiaries in Singapore are exported into the international markets and any significant difference in the rate of inflation as compared to their parent companies affects the cost competitiveness of these subsidiaries. Rampant inflation would represent adverse environmental conditions and low inflation represents conducive environmental conditions. Indicator 9 investigates the respondents' perceptions on the rate of inflation.

Indicator 10 : Governmental attitudes toward manufacturing  
industries

The nature of the relationship that exists between business and political institutions in the Japanese society is quite different from that prevailing in the United States. Most observers of the Japanese political scene would agree that there is a high degree of cooperation between Japanese business and government. Kuroda (1975) observes that the role of government in the growth of the

Japanese business economy is similar to a partnership, where the economic planning function includes the development of detailed business projections both regulating and assisting business in ongoing operation. Behrman (1971) suggests that the availability of government resources in economic planning and in support of business interests has enabled the Japanese private business sector, through consolidation, to achieve a concentration of industrial power sufficient to meet the demands of the competition offered by longer established foreign companies. Indicator 10 is used for comparing the attitudes of the American, Japanese and Singapore governments toward manufacturing industries.

On the completion of giving his opinion on the ten indicators, the respondent was requested to give his overall opinion on the environmental conditions (on a scale of 1 to 10) of the country where his company is situated. The purpose of this last question is to compare the overall perception on environmental conditions of respondents against the perceptions on the ten indicators.

#### Questionnaire 2 : Management Philosophy

Pegels (1984:67) states that the important difference between Japanese and Western management is not one of technique but of attitude and philosophy. Ouchi (1982) argues that Japanese organizations emphasize the explicit awareness of the organization's philosophy to unite the activities of the employees through a common understanding of goals and values. According to Pegels (1984), Ouchi (1982), and Sethi et al. (1984) the proper attitude and



philosophy in Japanese organizations are reflected in the high productivity and high quality of the products they produced. Moore (1967), and Pegels (1984) suggest that the need for harmony, unity and cooperation is deeply embedded in Japan's cultural philosophy with Confucianism providing the ethical foundation for Japan's culture. Pegels (1984:78) identified the American equivalents of the Japanese management philosophy as : (1) job guarantees; (2) generous fringe benefits and retirement programmes; (3) profit sharing, (4) participative management, job democracy, and quality circles; (5) suggestion systems; (6) flexible time; (7) job enrichment; (8) company- sponsored activities; (9) company provided recreational activities; (10) company employee newspapers; (11) safety-first campaigns; and (12) product discounts.

Ten indicators were identified in this questionnaire to investigate the transferability of U.S. and Japanese management philosophy. The respondent was requested to describe the management philosophy of his company based on the ten indicators on a scale ranking from 1 to 5. Most of these indicators were drawn from section 3.4 which describes the unique features of Japanese management which are significantly different from the U.S. management system:-

1. Management's concern for employee development
2. Employee's perception of company's concern toward individual development
3. Degree of permanent employment
4. Decision-making by consensus
5. Degree of autonomy given to the Singapore company

6. Policies intended to improve employee morale
7. Company-sponsored recreational activities
8. Management support for quality control circles or informal group activities
9. Solicitation of employee's suggestions
10. Basis on which the firm gives promotion

After giving his opinion on the ten indicators, the respondent was requested to give his overall opinion on his company management philosophy on a scale ranking from 1 to 10. Although this questionnaire was developed from section 3.2 in late 1983 before Pegels' (1984) publication, there are many similarities between the questionnaire indicators and the American equivalents identified by Pegels. Job guarantees is covered by questionnaire indicator 3; participative management, job democracy, quality circles are covered by indicators 4, 5, and 8; suggestion systems are covered by indicator 9, profit sharing, job enrichment, company employee newspapers, safety-first campaigns, product discounts are covered by indicator 6; company-sponsored and company-provided activities are covered by indicator 7. These similarities suggest that the indicators for this questionnaire have been correctly identified.

### Questionnaire 3: Management Functions/Practices

Ten indicators were identified in this questionnaire and the respondents were requested to describe their opinion using the ten indicators by ranking them on a scale ranking from 1 to 5 as follows:-

Please circle a number for each indicator below which most closely describes your opinion regarding the quality of each function/practices in your company

Indicators	Least (or poor)			Most (or good)	
1. Planning orientation	1	2	3	4	5
2. Quality control	1	2	3	4	5
3. Equipment maintenance	1	2	3	4	5
4. Standard setting for supervisory personnel (1=Not done; 5=Systematically done)	1	2	3	4	5
5. Standard setting for supervisory personnel (1=Not done; 5=Systematically done)	1	2	3	4	5
6. Budgeting and resource allocating	1	2	3	4	5
7. Managers' perception of subordinates (1=No confident; 5=Not difficult)	1	2	3	4	5
8. Difficulty of managing the subsidiary in Singapore (1=Very difficult; 5=Not difficult)	1	2	3	4	5
9. Action taken to improve efficiency	1	2	3	4	5
10. Coordination of manufacturing activities	1	2	3	4	5

III. On the whole, what is your assessment of the quality of management functions/practices of your company.

Very poor									Excellent
1	2	3	4	5	6	7	8	9	10

Most of the indicators in this questionnaire are derived from Negandhi-Prasad (1971:23) research model and Negandhi's (1973)



study. Emphasis is placed on indicators related to manufacturing industry since the firms involved in this research belong to the manufacturing industry. Indicator 1 covers the planning function; indicators 2, 3, 6, and 9 cover the controlling function; indicators 4, 5, and 8 cover the direction and leadership function; indicator 7 covers the staffing function; and finally indicators 6 and 10 cover the organization function. After giving his opinion on the ten indicators, the respondent was requested to give his overall opinion on management functions/practices on a scale ranking from 1 to 10.

#### Questionnaire 4 : Management Effectiveness

The first eight indicators in ascertaining the degree of management effectiveness were derived directly from factors suggested by Negandhi (1973:129):

- (1) Management ability to attract and retain high-level manpower.
- (2) Employee morale and satisfaction in work.
- (3) Employee turnover and absenteeism.
- (4) Interpersonal relationships in organizational settings.
- (5) Subsystem behavioural relationships (Departmental relationships).
- (6) The executive's perception of the firm's overall objectives.
- (7) Utilization of high-level manpower.
- (8) Organizational effectiveness in adapting to the external environments.
- (9) Attitude of Singaporean workers toward expatriate managers
- (10) Efficiency of subsidiary/parent plant

The last two indicators were derived from two major factors used by the Singapore National Productivity Board in their annual productivity survey. The respondent was requested to describe his opinion regarding management effectiveness using the ten indicators by ranking them on a scale from 1 to 5. Finally, the respondent was requested to give his overall opinion regarding management effectiveness in his company on a scale ranking from 1 to 10.

#### Development of the final questionnaire

The final questionnaires prepared for the four groups of firms in three countries (U.S., Japan and Singapore) are given in appendices 3A to 3J. The objectives of these questionnaires are to investigate four management variables under study : environmental conditions, management philosophy, management functions/practices and management effectiveness. The final questionnaires were developed after analysing the results of the pilot study. Appendices 1A to 1H show the questionnaires used during the pilot study. Section 6.5 describes the improvements made in the questionnaires.

Questionnaires for Japanese companies and their subsidiaries are given in English language with Japanese translation. Questionnaires for U.S. parent companies and their subsidiaries are given in English language. Following the same procedure used successfully in the pilot study, one Japanese graduate engineer and one Singaporean graduate lecturer in Japanese language were requested to translate the questionnaires back and forth (from Japanese to English, and vice versa) thrice. It is expected that the presence of two

languages on the questionnaire should increase the validity of the results although many Japanese are familiar with the English language.

#### 5.4 Development of the final interview form

Bailey (1982) recommends the use of forms by interviewers for at least two reasons. First, they provide a list of relevant topics for the guidance of the interviewer. This list is especially important when a certain uniformity or comparability of results in interviewing a large group of people is to be maintained. Second, they are useful devices for recording the statements during the interviews.

The interview form was developed initially from section 3.3 which discussed the predominant features of Japanese management system which are significantly different from the U.S. management system. The interview form used in the pilot study is presented in appendix 2. This form was used as a guide to provide a list of relevant topics for the interviewer during the pilot study. Results of the pilot study indicate that the form is inadequate as productivity data were not obtained. The form was revised in section 6.5 to include questions pertaining to labour and capital productivity and also suggestions for improvement to the form based on feedback and discussions with U.S. and Japanese Chief Executives involved in the pilot study. The final interview form is presented in Appendix 4.



## 5.5 Research Design Of This Study

The investigation in the form of questionnaires and interview analysis were carried out on U.S. subsidiaries based in Singapore and their parent companies in the United States and also on Japanese subsidiaries based in Singapore and their parent companies in Japan. The reason for using subsidiaries and their parent companies is to measure the impact of environmental conditions on management effectiveness, functions and philosophy. In addition the general problems of specific external factors affecting any specific functions of managers can be identified. It can be seen that there are two groups of companies and four groups of firms in three countries as follows :-

Two Company Groups	Four groups of firms	Three Countries
American	1. Parent companies in the U.S. (Questionnaires)	U.S.
	2. U.S. subsidiaries in Singapore (Questionnaires and interviews)	Singapore
Japanese	3. Japanese subsidiaries in Singapore (Questionnaires and interviews)	
	4. Parent companies in Japan (Questionnaires)	Japan

The research design takes into account the criteria identified in the review of literature relating to comparative management, comparative U.S. and Japanese management system, and methodological review given in chapters two, three, and four. In this research the following criteria will be used for the selection of companies:-

(a) Manufacturing industries from four industrial sectors, to assure an array of technological, environmental, market and other influence. As pointed out in chapter 3, most previous studies are restricted to one industry and the impact of different industrial sectors is not examined. The four industrial sectors used in this research design would provide data for analyzing the impact of different industrial sectors.

(b) Comparative organizational studies (Pugh and Hickson, 1976; Child, 1984) have indicated that the size of an organization has an important bearing upon organizational structure. In this research, U.S. and Japanese manufacturing companies were selected so that they are comparable in terms of size (number of employees and fixed assets).

(c) Subsidiaries in the same industry as the parent companies:

(d) Managed by U.S. or Japanese expatriates.

This research is based in Singapore which is a very small country and consequently the number of manufacturing establishments is very few in comparison with other industrialized countries. Mirza

(1986:97) gives the total number of foreign manufacturing establishments in Singapore as 895 with American and Japanese accounting for 118 and 183 manufacturing establishments respectively. Having considered the small number of U.S. and Japanese manufacturing establishments in Singapore, the research design aims to survey at least five companies in four industrial sectors giving a total of 80 companies as follows :-

Industrial sector	1	2	3	4
1. Parent companies in the U.S.	5	5	5	5
2. U.S. subsidiaries in Singapore.	5	5	5	5
3. Japanese subsidiaries in Singapore	5	5	5	5
4. Parent companies in Japan	5	5	5	5
Total	20	20	20	20

The four industrial sectors were selected based on the different types of production processes, pace of technological change and engineering specialization. The different types of production processes and pace of technological change inherent to each industrial sector may help to highlight the strengths and weakness of U.S. and Japanese management systems. For example, a



continuous production process normally require workers to work three shifts and the ability of management to motivate workers to work three shifts can be compared. Batch and jobbing type of production processes normally require higher skilled workers since they are expected to work on different models/products. Here the ability of management in retaining and training skilled workers can be compared. Finally, the ability of U.S. - Japanese management in coping with slow or rapid technological changes inherent to each industrial sector can also be compared. The four industrial sectors selected for the study are:-

Industrial sector 1 : Petrochemicals, chemicals, pharmaceuticals,  
food, non-metallic products.

Characteristics : Continuous production processes and moderate  
rate of technological change

Industrial sector 2 : Precision engineering, machine tools,  
industrial machinery, tool and dies.

Characteristics : Batch production processes and moderate rate of  
technological change

Industrial sector 3 : Shipbuilding, automotive, engineering services.

Characteristics : Jobbing production processes and slow  
technological change

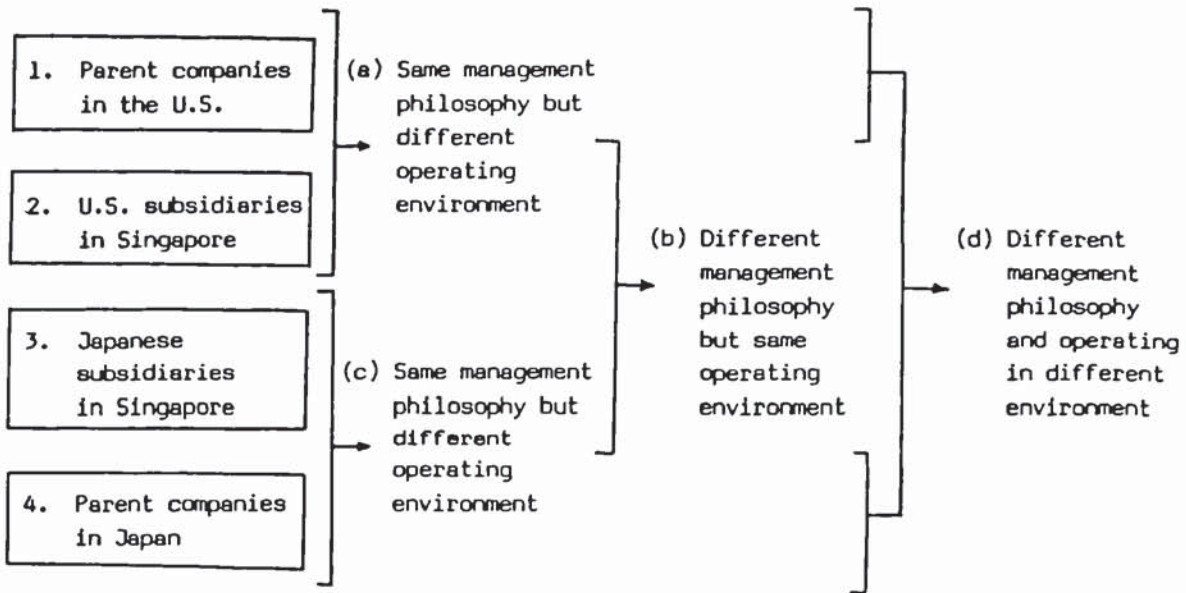
Industrial sector 4 : Electronics, Electrical.

Characteristics : Generally batch production processes and very  
rapid technological change

This research adapts the Kelley-Worthley (1981) research design depicted in figure 4 for the comparison of different management philosophies under the same operating environment and also the comparison of same management philosophies under different operating environments. Using this design the following conditions can be studied:-

- (a) U.S. companies in the U.S. and U.S. subsidiaries in Singapore, having the same management philosophy but operating in different environments.
- (b) U.S. and Japanese subsidiaries in Singapore, having different management philosophy but operating in the same environment.
- (c) Japanese companies in Japan and Japanese subsidiaries in Singapore, having the same management philosophy but operating in different environment.
- (d) U.S. companies in the U.S. and Japanese companies in Japan, having different management philosophy and operating in different environment.

The conditions (a), (b), (c), and (d) can be represented as follows:



The design of this research is as follows:

The Manufacturing Firm	Environmental Conditions	Management Philosophy	Management Functions/ Practices	Management Effectiveness	Firm Productivity
	(A)	(B)	(C)	(D)	(E)
Parent company in the U.S. (1)	a1	b1	c1	d1	
U.S. subsidiary in Singapore (2)	a2	b1	c2	d2	e1
Japanese subsidiary in Singapore (2)	a2	b2	c3	d3	e2
Parent company in Japan (3)	a3	b2	c4	d4	



In order to investigate the similarities and differences among the firms studied, the impact of the five variables, environmental conditions (A), management philosophy (B), management functions/practices (C), management effectiveness (D), and firm productivity (E), need to be ascertained separately.

It can be seen from the research design that any differences between c1 (Parent company in the U.S.) and c3 (Japanese subsidiary in Singapore) will be due to differences in environmental conditions a1 and a2, and in management philosophy b1 and b2. In order to segregate the impact of management philosophy and environmental factors on the management process, a situation where both management philosophy and environmental conditions can become experimental variables separately is necessary. This can be achieved by studying an U.S. subsidiary in Singapore c2, pursuing the same management philosophy as the parent company in the U.S. Therefore, differences between c1 and c3 can be accounted for as follows:

- (1) Differences between c1 and c2 are due to differences in U.S. environmental conditions a1 and Singapore environmental conditions a2. In this situation, the management philosophy is the same and is, therefore a constant variable; and environmental conditions is an experimental variable.
- (2) Differences between c2 and c3 are due to differences in management philosophy b1 (U.S.) and b2 (Japanese) respectively. Since c2 and c3 are both having the same environment in

Singapore, therefore, environmental conditions is a constant variable, and management philosophy is an experimental variable.

Differences between all other variables can be accounted for in a similar manner by segregating the variables into constant and experimental variables. The methodological advantage of this research design can now be observed. If U.S. subsidiaries in Singapore are found to be more effective than Japanese subsidiaries, then the conclusion is that U.S. management systems is more productive in the Singaporean environment and c3 could follow the effective portion of the management practices of c2 to achieve better results. Results of the research will also lead to the comparison of the effectiveness and transferability of U.S. and Japanese management systems. As shown in the research model, the indices for firm productivity (e1 and e2) can be used as the effectiveness criteria (discussed in section 4.1) for this comparative study since both U.S. and Japanese subsidiaries in Singapore can be assumed to have the same environment.

## 5.6 Conclusions

The research model for this study was adapted from the Negandhi-Prasad (1971) research model. Methodological difficulty confronting studies relating to comparative U.S. - Japanese management research identified in chapter three, the importance of inclusion of an effectiveness criterion, and the need for rigorous comparative

data for evaluating the observed phenomena were all taken into consideration for the formulation of the research model. The five management variables used in the research model are : (1) environmental conditions; (2) management philosophy; (3) management functions/practices; (4) management effectiveness; and (5) firm productivity. The research instruments consist of questionnaires and interview form which were developed to investigate the five management variables. The research design for the comparison of different management philosophies under same operating environment and the comparison of the same management philosophy under different operating environment was adapted from the Kelley-Worthley (1981) research design. The research aims to survey four groups of firms comprising of U.S. parent companies, U.S. subsidiaries operating in Singapore, Japanese parent companies, and Japanese subsidiaries operating in Singapore with at least five companies in each group from four industrial sectors giving a total of at least 80 companies surveyed. A pilot study needed to be conducted for the purpose of obtaining feedback on the validity of the questionnaires and interview form developed in this chapter. In the next chapter, the results of the pilot study are analysed and the improvements made to the questionnaires and interview form are discussed.



## PART 2

### ANALYSIS OF RESULTS AND DISCUSSIONS

Part 2 consists of three chapters which discuss and analyse the data obtained from questionnaires and interviews.

Chapter 6 describes the pilot study which was carried out from October 1984 to February 1985. The pilot study consists of questionnaires and interview analysis of a total 16 companies from four groups of firms in four industrial sectors. The validity of the questionnaires and interview form was investigated by the pilot study. From the analysis of the pilot study data, some minor changes to both the questionnaires and the interview form were made.

The main study using questionnaire and interview analysis of 80 U.S. and Japanese subsidiaries operating in Singapore and their respective parent companies was carried out from 3rd June 1985 to 29th March 1986. The questionnaire analysis of the 80 companies is given in Chapter 7. Questionnaire data were analysed using two-way analysis of variance. The analysis covers 10 indicators each for environmental conditions, management functions/practices, management philosophy and management effectiveness. The findings from the analysis were then summarized.

Chapter 8 covers the interview analysis for a total of forty U.S. and Japanese subsidiaries operating in Singapore. The first interview was first carried out in October 1984 and the last interview on 15th May 1986. Problems encountered during the interviews were discussed and inaccurate data were investigated by follow-up interviews. Finally the data from the interviews were analysed and summarized.

## CHAPTER 6

### PILOT STUDY

#### 6.1 Pilot Study carried out from October 1984 to February 1985

The objectives of the pilot study were to gather information on the research topics and feedback on the validity of the questionnaires (appendix 1) and interview form (appendix 2). The interview questions were constructed so as to facilitate the investigation of the research topics in greater detail.

Nath (1968) has stressed the importance of pilot studies in comparative management research. Pilot studies are very important because of the need to ensure comparability and the quality of the data to be gathered from different companies. Furthermore, as in all types of research, the pilot study may give an indication of the response expected in the main study.

A pilot study, using questionnaires for all the four groups of firms and interview analysis for subsidiaries in Singapore, was carried out in four industrial sectors. Two U.S. and Japanese firms from each industrial sector was selected so that they were comparable in size (number of employees and fixed assets). The pilot study was structured as follows :-

Four groups of firm	Industrial sector			
	1	2	3	4
1. Parent companies in the U.S. (Questionnaires)	2	2	2	2
2. U.S. subsidiaries in Singapore (Questionnaires and interviews)	2	2	2	2
3. Japanese subsidiaries in Singapore (Questionnaires and interviews)	2	2	2	2
4. Parent companies in Japan (Questionnaires)	2	2	2	2

One of the criteria used for the selection of companies was that it should be managed by U.S. or Japanese expatriates (section 5.5). From the onset all participating companies were informed that the interviewee must be an expatriate (Japanese for Japanese subsidiary and American for U.S. subsidiary). Most subsidiaries in Singapore, particularly U.S. subsidiaries have very few expatriates because of the relatively high cost of employing them. Further, in most companies, expatriates with few years of experience in managing the subsidiaries in Singapore were limited to the chief executives. Hence, it was decided that it would be necessary to interview in



each company, if possible, the chief executive. Otherwise the representative should be an expatriate manager with at least two years' experience in the subsidiary. Thus, all interviews were confined to Japanese and U.S. expatriates.

Appointments for all interviews were made by telephone. On the average it took three phone calls to secure an appointment. In all cases the appointments were made approximately three weeks in advance. A covering letter (appendix 5), questionnaires, and the interview form were immediately posted to the company when an appointment was granted. This ensured that the interviewees had at least two weeks to answer the questionnaires and to familiarize themselves with the topics of interview. The return of questionnaires from parent companies in the U.S. and Japan were also ensured as these were sent through their respective subsidiaries in Singapore. The length of interview time ranged from 1 1/2 to 3 hours and the responses were recorded in longhand. Although a miniature tape-recorder was carried by the researcher during all interviews, every interviewee insisted that interviews should not be tape-recorded.

The general observation was that managers of both U.S. and Japanese subsidiaries in Singapore were willing to grant interviews if the appointments were fixed at least three weeks in advance and the topics (and objectives) of the interview were made clear to them. The ease of obtaining interviews and returns on the questionnaires was mainly due to the fact that Singapore is a very small developing country and most representatives of companies were known to the

researcher through an earlier national research study on productivity organized by the National Productivity Board in Singapore. However all companies strongly insisted on the information and names being kept confidential. Their main worries concerning confidentiality of information were that some of their views might be against the government policies and trade competitors might gain undue advantage over them if information such as expansion plans and salary structure were exposed. To ensure complete confidentiality of information the names of interviewees and company are not given.

## 6.2 Pilot Study Findings

The analysis of pilot study data was focused on (1) obtaining feedback from respondents on adequacy of questionnaires and interview forms to cover the topics of research; (2) testing validity of English-Japanese translation; and (3) improving questionnaires and interview forms using relevant suggestions from respondents. Hence, findings are briefly analysed in summarized form.

### 6.2.1 Pilot Questionnaire Data

The average (mean) response for each questionnaire (appendix 1) from eight companies belonging to four groups of firms were summarized and the relevant indicators were used to cross-check descriptive

information from the pilot interview (section 6.2.2). The research design was structured on four industrial sectors to provide extra data for comparing different industrial sectors. This extra source of data is possible only if the collection of data is stratified according to different industrial sectors. Analyses for differences among the four groups of firms are not affected by this provision. As such the design serves only to provide additional data. In addition, the sample size of two firms per industrial sector used in the pilot study is too small to provide a preliminary analysis for each industrial sector. Hence, it was not necessary to analyse individual data from each industrial sector during the pilot study because the extra data for each industrial can only provide useful information and have no adverse effect on the main study. The summary of questionnaire data is as follows:-



Questionnaire 1 (app. 1A): Environmental Conditions

Indicators	U.S. Parent Co. N = 8 Mean	U.S. Sub. N = 8 Mean	Jap. Parent Co. N = 8 Mean	Jap. Sub. N = 8 Mean
1 Good attitudes toward persons in authority	3.63	3.75	3.13	4.13
2 Tendency toward teamwork	3.00	3.25	2.50	4.13
3 Importance of wealth and material gain	4.38	4.13	4.25	4.38
4 Employment situation	3.63	3.25	3.75	4.25
5 Literacy level of population	4.25	4.25	3.75	4.38
6 Availability of trained or skilled personnel	4.00	3.63	3.75	4.25
7 Attitude toward education	3.25	4.25	4.13	4.63
8 Union-labour relationship	3.50	4.50	4.25	4.25
9 Rate of annual inflation (1=very high; 5=very low)*	3.50	4.25	3.75	3.63
10 Governmental attitudes toward workers and business community	3.38	4.25	4.38	4.38
I Overall assessment on environmental conditions	7.13	7.75	6.50	8.13

\* This scale was change from (5=very high; 1=very low) at the suggestion of an American Managing Director during the first interview for the pilot study. He pointed out that low inflation means good environmental condition. Thus, "very low" inflation should be equivalent to "5" which represents "good". The alteration was carried out immediately on all questionnaires used for the pilot study.

Questionnaire 2 (app.1B): Management Philosophy

Indicators	U.S.	U.S.	Jap.	Jap.
	Parent Co. N = 8 Mean	Sub. N = 8 Mean	Parent Co. N = 8 Mean	Sub. N = 8 Mean
1 Management's policy toward employee development	3.38	3.75	4.13	4.25
2 Employee's perception of company's concern toward individual development	3.12	3.25	2.75	4.00
3 Degree of permanent employment	3.38	3.00	4.00	4.50
4 Decision-making by consensus	2.50	3.25	3.38	4.50
5 Percent of stock own by the parent company*	N.A.	1.75	1.13	N.A.
6 Motivation to improve employee morale	4.25	4.13	3.63	4.38
7 Company-sponsored recreational activities	4.00	3.88	3.38	4.13
8 Management support for quality control circles or informal group activities	4.00	3.25	4.25	4.50
9 Solicitation of employee's suggestions	4.00	3.38	4.38	4.50
10 Basis on which the firm gives promotion	4.50	4.38	3.88	2.25
II Overall assessment on management philosophy	7.50	6.50	7.13	8.38

\* This question was changed to "Degree of autonomy given to the Singapore company" in the final questionnaire. The rationale for the change was that almost all U.S. and Japanese subsidiaries managed by expatriates were 100% foreign ownership making the original question redundant. "Degree of autonomy given to the Singapore company" was suggested as a more useful question on management philosophy since the data obtained would provide a comparison on the degree of control which U.S. and Japanese parent companies exert on subsidiaries.

Questionnaire 3 (app.1C): Management Functions/Practices

Indicators	U.S. Parent Co. N = 8 Mean	U.S. Sub. N = 8 Mean	Jap. Parent Co. N = 8 Mean	Jap. Sub. N = 8 Mean
1 Planning orientation	4.25	4.13	3.75	4.25
2 Quality control	4.25	4.25	3.63	4.63
3 Equipment maintenance	4.13	3.88	3.75	4.50
4 Standard settings for production workers (1=not done; 5=Systematically done)	4.50	4.50	4.13	4.00
5 Standard setting for supervisory personnel (1=Not done; 5=Systematically done)	4.13	4.00	4.25	4.25
6 Budgeting and resource allocating	4.13	4.13	4.25	4.50
7 Managers' perception of subordinates (1=Not confident; 5=Confident)	4.13	3.00	3.00	4.38
8 Difficulty of managing subsidiary in Singapore (1=Very difficult; 5=Not difficult)	N.A.	4.13	3.88	N.A.
9 Actions taken to improve efficiency	4.38	4.25	3.75	4.50
10 Coordination of manufacturing activities	4.50	4.25	3.63	4.63
III Overall assessment on management functions/ practices	7.75	7.13	7.00	7.88



Questionnaire 4 (app.1D): Management Effectiveness

Indicators	U.S. Parent Co. N = 8 Mean	U.S. Sub. N = 8 Mean	Jap. Parent Co. N = 8 Mean	Jap. Sub. N = 8 Mean
1 Management ability to attract and retain high-level manpower	4.25	4.25	3.25	4.50
2 Employee morale and satisfaction in work	4.38	4.25	3.75	4.50
3 Employee turnover and absenteeism (1=Very high; 5=Very low)	3.88	3.12	2.25	4.88
4 Interpersonal relationships in organizational settings	3.88	3.63	3.75	4.75
5 Departmental relationships	4.00	3.38	4.13	4.75
6 The executive's perception of the firm's overall objectives (1=Departmental objective is most important) (5=Company's objective is most important)	3.75	3.50	3.50	4.50
7 Utilization of high-level manpower	4.50	4.25	3.50	4.63
8 Organizational effectiveness in adapting to Singapore environment (1=Much difficulty; 5=Without much difficulty)	N.A.	4.63	3.25	N.A.
9 Impression of Singaporean workers toward expatriate managers	N.A.	4.13	3.25	N.A.
10 Efficiency of subsidiary/parent plant	4.38	4.25	3.13	4.63
IV Overall assessment on management effectiveness	7.88	6.88	6.25	8.75

## Summary of Pilot Questionnaire Survey

The returns of questionnaires from the U.S. and Japanese subsidiaries in Singapore were 100% as most questionnaires were collected during the interviews. The returns of questionnaires from parent companies in the U.S. and Japan were also 100% because questionnaires were sent through their respective subsidiaries in Singapore although follow-ups were necessary. In addition, all returned questionnaires were correctly completed. This was interpreted as the proof of the validity of the questionnaires and the translation.

As interviews were done three weeks after sending the questionnaires, it was possible to seek the interviewees' views concerning the adequacy of the questionnaires in surveying the topics of research. Apart from some minor alterations on questionnaires 1 and 2, all interviewees agreed that the four questionnaires together with the topics covered by the interview form should obtain sufficient data for this research.

### 6.2.2 Interview Findings

#### Decision-Making :

##### U.S. subsidiaries

Most U.S. subsidiaries did not strive for consensus in the decision-making process. The main reason was that "it is too

slow". Usually the subsidiary worked virtually on its own so that consensus between the subsidiary and corporate headquarters was unnecessary.

In addition, most decisions within the subsidiary were made by the chief executive with little or no consensus. The only indication on consensus detected were "committees to increase quality awareness", and "we work better as a team". Decision-making functions were centred on the management with little or no participation from others. Singaporeans appeared to be "at home" with the U.S. methods.

#### Japanese subsidiaries

All Japanese subsidiaries interviewed employed the "ringi" decision-making system. There were no significant differences among the four industrial groups. Decisions were analysed and discussed at all levels of the management hierarchy with the bulk of decisions made by mid-level management. Decisions were usually based only on unanimous agreement by group members. Harmony within the organization and trouble-free working relationships were preferred even if efficiency would suffer.

Consensus was usually attained via the use of a committee system or "stamp" system where the members agree by leaving their "stamp" on the draft. The advantages cited were higher morale, "avoids unfair or radical decision" and "promote teamwork". The disadvantages mentioned were "no clear-cut responsibility" and "takes a long time



to decide".

The general observation was that Singaporeans adjusted to the Japanese "ringi" decision-making system easily.

### Analysis

Both the U.S. and Japanese methods of decision-making appear to be applicable to Singapore without modification. This finding generally agrees with the almost similar averages of 3.25 and 3.38 returned by U.S. and Japanese subsidiaries respectively on decision-making by consensus in pilot questionnaire survey (Q2, indicator 4). However, the significantly lower average of 2.5 from U.S. parent companies and higher average 4.5 from Japanese parent companies suggest that Japanese parent companies practise a high degree of consensual decision-making as compare to U.S. parent companies.

### Management Development and Overseas Assignments :

#### U.S. subsidiaries

Most U.S. managers interviewed indicated that overseas assignments were on a voluntary basis. Some managers however, remarked that selection criteria were being exercised. Criteria such as no minor children at the time of assignment, managerial talent, specialized expertise, language were cited. Most firms did not provide special training. An overseas assignment was perceived to be good for one's career with the company.

In addition, most companies implemented some systematic management development programmes to groom local talents for managerial positions.

### Japanese subsidiaries

Japanese managers for Singapore subsidiaries were selected. Selection criteria cited were seniority, managerial talent, character, good personality and proficiency in English language.

Most Japanese managers preferred to stay in Japan. The majority of the managers received some specialized training before their posting to Singapore.

All Japanese managers felt that the overseas assignment was a plus for their career in the long-run. The reasons were that "promotion is difficult at home", and "contribution to company is higher when on overseas assignment". The negative responses were concern about children's education and uprooting their families to stay in Singapore.

All Japanese subsidiaries implemented some form of systematic management developing programmes to groom local talents for managerial positions.

### Analysis

The Japanese subsidiary managers were selected and assigned non-

voluntarily. In contrast, the U.S. subsidiary managers' positions were generally filled on a voluntary basis. Japanese companies generally provide some training for their managers before posting them to Singapore. Managerial talent appears to be a major selection criteria in appointing a subsidiary manager for both U.S. and Japanese companies. Both U.S. and Japanese subsidiaries implemented some form of systematic management development programmes to groom and develop local talents for managerial positions.

#### Employment, Promotion Criteria and Loyalty :

##### U.S. subsidiaries

Most U.S. subsidiaries attempted to instill loyalty by providing training, generous medical benefits, low interest car loan, and sponsoring recreational activities but admitted that they were not successful. However all companies would resort to layoffs in times of slack demand and hiring of more employees in times of high demand. Both seniority and productivity were taken into consideration for promotion of employees.

##### Japanese subsidiaries

All Japanese managers attempted to instill loyalty by providing training and offering long term employment. Most believed that they were not successful. Their observations were that Singapore workers preferred to have high salaries rather than security of a life-time job. Hence many good employees left for higher paid jobs after



acquiring skills in their company and striving for life-time employment seemed unrealistic. This is substantiated by questionnaire survey (Q 4, indicator 1; Q4, indicator 3) which shows that Japanese subsidiaries are unable to retain high-level manpower and have very high labour turnover as compared to their parent companies. All Japanese subsidiaries kept their workers in times of slack demand following their parent companies' tradition. In times of high demand, company preferred overtime to hiring new employees. Both seniority and productivity were taken into consideration for promotion.

#### Analysis

Both U.S. and Japanese subsidiaries are not successful in instilling loyalty to the organization in their Singapore workers. Virtually all U.S. subsidiaries would resort to layoffs in times of slack demand. In contrast no Japanese subsidiaries would resort to layoffs in times of slack demand. This agrees with the pilot questionnaire survey (Q2, indicator 3) which shows that U.S. subsidiaries returned a lower average of 3 as compared to 4 from Japanese subsidiaries. Both U.S. and Japanese subsidiaries consider seniority and productivity as main promotion criteria. This also agrees with the pilot questionnaire survey (Q2, indicator 10) which shows that Japanese subsidiaries (average 3.88) consider both seniority and performance as main promotion criteria by giving more emphasis to performance as compared to their parent companies (average 2.25).

### Business/Government Relations and Labour Relations :

Both U.S. and Japanese subsidiaries managers observed that the government does not interfere with their activities. However both groups stressed that the annual National Wage Council (NWC) recommendation, employer's Central Provident Fund (CPF) contribution of 25% employee's salary, payroll tax 2% and skill development funds contribution of 4% were making their operations in Singapore more expensive than other South East Asian regions. Labour relations were cited as excellent with no day lost through strike for the previous eight years for the entire country. This is substantiated by the pilot questionnaire survey (Q1, indicator 8; Q1, indicator 10) which show good union-labour relationships and good governmental attitudes toward workers and business community in Singapore.

### The Singaporean Worker :

#### U.S. subsidiaries

Most subsidiaries managers perceived the average Singaporean worker to be equally hardworking as compared to U.S. workers. Most believed that there were no significant differences except one company which suggested that "Singaporean worker is definitely more productive than the U.S. worker".

#### Japanese subsidiaries

All managers perceived the average Singaporean worker to be less

hardworking than the average Japanese worker. Most believed that Singaporeans are good individual workers but bad team workers as compared to the Japanese.

### Analysis

The "average" Singaporean worker seems to be equally productive when compared to the U.S. worker but less productive when compared to Japanese workers. This agrees with the pilot questionnaire survey (Q4. indicator 10) which shows the efficiency of Japanese subsidiaries (3.13) to be significantly lower than Japanese parent companies (4.63) and no significant differences between U.S. subsidiaries (4.25) and their parent companies (4.38).

In addition, Singaporean workers are individualistic and not team workers as compared to the Japanese. This is substantiated by pilot questionnaire 1, indicator 2, which shows tendency toward teamwork in Japanese subsidiaries (2.5) as significantly lower than their parent companies (4.13).

### Recreational activities for employees :

Both U.S. and Japanese subsidiaries sponsored recreational activities such as badminton, picnics, squash, company parties, athletics, and other related activities. This is substantiated by the relatively high averages of 3.88 and 3.38 returned by U.S. and Japanese subsidiaries.



### Communication with parent companies :

There were no problems in communicating with parent companies. Both U.S. and Japanese subsidiaries communicated with their parent companies using telephone communication and telex messages. In addition, trips to their parent companies were made from once a year to once every three years for consultations.

### Problems encountered in subsidiaries :

#### U.S. subsidiaries

U.S. managers seem to be satisfied with the quality levels attained by Singaporean workers. They did not encounter resistance to change in managerial practices. Most U.S. managers also agreed that their overseas staff integrate well with the local staff. All these findings concurred with the good response to relevant indicators in pilot questionnaire survey. For example, Q3, indicator 2, Quality Control = 4.25; Q3, indicator 8, Difficulty of managing subsidiary = 4.25 where 5 represents not difficult; Q4, indicator 9, Impression of Singaporean workers toward expatriate managers = 4.13.

#### Japanese subsidiaries

Japanese managers found it difficult for their subsidiaries to attain quality levels similar to those of Japan. Some estimated Singapore to be at least 10 years behind Japan. There was no significant resistance to change in managerial practices. Integration of Japanese and local staff was reported to be difficult

mainly due to language problems. Most Japanese shopfloor workers have poor command of English and virtually all Singaporeans do not understand Japanese. These findings are substantiated by the relatively poor assessment of equivalent pilot questionnaire indicators. For example, Q2, Quality Control = 3.63 compared to 4.63 for parent companies; Q2, indicator 8, Difficulty of managing subsidiaries = 3.88, compared to 4.13 for U.S. subsidiaries; Q4, indicator 9, Impression of Singaporean workers toward expatriate managers = 3.25, compared to 4.13 for U.S. subsidiaries.

### 6.3 Summary of the Pilot Study

Generally the U.S. subsidiaries' managers feel that U.S. managerial practice in its pure form can be used in Singapore. However, Japanese managers believe that some modifications or hybridization of their practices is necessary. Japanese managers perceive Singaporean workers as "individualistic" and not "group or team worker". Consequently Japanese management cannot be practised in its pure form in Singapore. Life time employment practice is also unrealistic in Singapore.

The findings of the interview analysis are summarized as follows :-

1. Both the U.S. and Japanese methods of decision-making appear to be applicable to Singapore without modification.
2. Both U.S. and Japanese subsidiaries implemented some form of systematic management development programmes to groom and develop local talents for managerial positions.

3. The U.S. subsidiary would resort to layoffs but no Japanese subsidiary would resort to layoffs. Seniority and productivity were used by both groups of subsidiaries as the main criteria for promotion.
4. Business/Government relations and labour relations were good except that operating costs in Singapore were higher than other neighbouring countries.
5. The "average" Singaporean worker was equally productive when compared to the U.S. worker but less productive when compared to Japanese workers. Singapore workers were "individualistic".

6.4 Improvements made in the questionnaires and interview form

The feedback and discussions from the interviews carried out during the pilot study enabled improvements to be made in the questionnaires and interview form. The following improvements were made in the questionnaires and interview form :-

Questionnaire 1 : Environmental Conditions

<u>Pilot Study</u>	<u>Final Questionnaire</u>
Please circle a number for each indicator below which most closely describes your opinion.	<u>Q1 (a)</u> Please circle a number for each indicator below which most closely describes your opinion of the environmental conditions in the United States.



	<p><u>Q1 (b)</u></p> <p>Please circle a number for each indicator below which most closely describes your opinion of the environmental conditions in Japan.</p> <p><u>Q1</u></p> <p>Please circle a number for each indicator below which most closely describes your opinion of the environmental conditions in Singapore.</p>
<u>Indicators</u>	
1 Good attitudes toward persons in authority	No change
2 Tendency toward teamwork	No change
3 Importance of wealth and material gain	No change
4 Employment situation	Availability of other workers (as indicator 6 in final questionnaire)
5 Literacy level of population	No change
6 Availability of trained or skilled personnel	No change
7 Attitude toward education	No change
8 Union-labour relationships	No change
9 Rate of annual inflation (5=very high; 1=very low)	Rate of annual inflation (1=very high; 5=very low)
10 Governmental attitudes toward workers and business community	No change

<p>I Please give your opinion on the overall assessment on environmental conditions of your company.</p>	<p><u>Q1 (a)</u></p> <p>I On the whole, what is your opinion on the United States as an environment for your company to operate in.</p>
	<p><u>Q1 (b)</u></p> <p>I On the whole, what is your opinion on Japan as an environment for your company to operate in.</p>
	<p><u>Q1</u></p> <p>I On the whole, what is your opinion on Singapore as an environment for your company to operate in.</p>

Questionnaire 2 : Management Philosophy

<u>Pilot Study</u>	<u>Final questionnaire</u>
<p>Please circle a number for each indicator below which most closely describes your opinion.</p>	<p>Please circle a number for each indicator below which most closely describes the practices in your company.</p>
<p><u>Indicators</u></p> <p>1 Management's policy toward employee development</p>	<p>Management's concern for employee development</p>
<p>2 Employee's perception of company's concern toward individual development</p>	<p>No change</p>

3 Degree of permanent employment	No change
4 Decision-making by consensus	No change
5 Percent of company stock own by the parent company	Degree of autonomy given to the Singapore company
6 Motivation to improve employee morale	Policies intended to improve employee morale
7 Company-sponsored recreational activities	No change
8 Management support for quality control circles or informal group activities	No change
9 Solicitation of employee's suggestions	No change
10 Basis on which the firm gives promotion	No change
II Please give your opinion on the overall assessment on management philosophy of your company.	On the whole, what is your assessment on management philosophy of your company.

Questionnaire 3 : Management Functions/Practices

<u>Pilot Study</u>	<u>Final Questionnaire</u>
Please circle a number for each indicator below which most closely describes your opinion.	Please circle a number for each indicator below which most closely describes the practices in your company.



<u>Indicators</u>	
1 Planning orientation	No change
2 Quality control	No change
3 Equipment maintenance	No change
4 Standard settings for production workers (1=not done; 5=Systematically done)	No change
5 Standard setting for supervisory personnel (1=Not done; 5=Systematically done)	No change
6 Budgeting and resource allocating	No change
7 Managers' perception of subordinates (1=No confident; 5=Confident)	No change
8 Difficulty of managing subsidiary in Singapore (1=Very difficult; 5=Not- difficult)	No change
9 Actions taken to improve efficiency	No change
10 Coordination of manufacturing activities	No change
III Please give your opinion on the overall assessment on management functions/practices of your company.	On the whole, what is your assessment of the quality of management functions/practices of your company.

Questionnaire 4 : Management Effectiveness

<u>Pilot Study</u>	<u>Final Questionnaire</u>
Please circle a number for each indicator below which most closely describes your opinion.	Please circle a number for each indicator below which most closely describes your opinion regarding the management effectiveness in your company
<u>Indicators</u>	
1 Management ability to attract and retain high-level manpower	No change
2 Employee morale and satisfaction in work	No change
3 Employee turnover and absenteeism (1=Very high; 5=Very low)	No change
4 Interpersonal relationships in organizational settings	No change
5 Departmental relationships	No change
6 The executive's perception of the firm's overall objectives. (1=Departmental objective is most important) (5=Company's objective is most important)	No change
7 Utilization of high-level manpower	No change
8 Organizational effectiveness in adapting to Singapore environment (1=Much difficulty; 5 = without much difficulty)	No change

9 Impression of Singaporean workers toward expatriate managers	Attitude of Singaporean workers toward expatriate managers
10 Efficiency of subsidiary/parent plant	No change
IV Please give your opinion on the overall assessment on management effectiveness of your company.	Please give your opinion on the overall assessment on management effectiveness of your company.

INTERVIEW FORM

Appendix 2 contains the interview form used in the pilot study. The interview form was revised and further questions were added. The final interview form was used as a guide for conducting interviews during the main study. Appendix 4 contains the final interview form. Additional questions were mainly derived from the feedback and discussions of the pilot study. Questions were also added to obtain information pertaining to labour and capital productivity. The final interview form contains the following additional questions:-

II CAPITAL STRUCTURE AS AT 1984 ( OR SPECIFY LATEST YEAR \_\_\_\_\_ )

12. Authorized capital \$ \_\_\_\_\_

13. Issued & paid-up capital \$ \_\_\_\_\_



14. Amount (proportion) invested by Singaporean residents \_\_\_\_\_

Amount (proportion) invested by foreigners (specify major nationality) i.e.

Share of local equity capital : \_\_\_\_\_%

wholly local [ ]

more than half foreign [ ]

more than half local [ ]

wholly foreign [ ]

Percentage share of parent company owned by other company if any:

Percentage share : \_\_\_\_\_

Name of company : \_\_\_\_\_

15. Capital expenditure on machinery and equipment S\$ \_\_\_\_\_

As percentage of total capital expenditure \_\_\_\_\_.

III PRODUCTION AND COSTS AS AT 1984 (OR SPECIFY LATEST YEAR: \_\_\_\_\_)

16. Production :

Annual turnover S\$ \_\_\_\_\_

17. Sales :

Local sales S\$ \_\_\_\_\_

Foreign (exports) S\$ \_\_\_\_\_

18. Total costs S\$ \_\_\_\_\_

Proportion of costs as : (%)

Wages \_\_\_\_\_

Imported inputs \_\_\_\_\_  
     Materials \_\_\_\_\_  
     Components \_\_\_\_\_  
     Parts & Machinery \_\_\_\_\_  
 Local inputs \_\_\_\_\_  
     Materials \_\_\_\_\_  
     Components \_\_\_\_\_  
     Parts & Machinery \_\_\_\_\_  
 Professional & management service fees  
     (specify foreign or local) \_\_\_\_\_  
 Licence fees & royalty payments  
     (specify foreign or local) \_\_\_\_\_  
  
 Value added : \_\_\_\_\_

IV EMPLOYMENT & REMUNERATION AS AT 1984 (OR SPECIFY LATEST YEAR)

19. Employees by nationality (number) :

	Singapore Citizen =====	Permanent Resident* =====	Others =====	Monthly Salary =====
Production Workers	_____	_____	_____	_____
Supervisory	_____	_____	_____	_____
Manual Service	_____	_____	_____	_____
Technical	_____	_____	_____	_____
Clerical	_____	_____	_____	_____
Professional(Technical)	_____	_____	_____	_____
Management	_____	_____	_____	_____
Line : a) Production	_____	_____	_____	_____

	b) Design	_____	_____	_____	_____
	c) Others	_____	_____	_____	_____
Staff :	a) Personnel	_____	_____	_____	_____
	b) Financial	_____	_____	_____	_____
	c) Sales	_____	_____	_____	_____
	d) Admin.	_____	_____	_____	_____
	e) Purchasing	_____	_____	_____	_____
	f) Maintenance	_____	_____	_____	_____
	g) Others	_____	_____	_____	_____

Description of temporary staff if any : \_\_\_\_\_

---

\* Please specify nationality

20. How do wages in Singapore compare with your country taking into account productivity differences?

Workers : \_\_\_\_\_

Middle management : \_\_\_\_\_

Senior management : \_\_\_\_\_

21. (a) What sort of production processes do you transfer to Singapore?

Old processes [ ]

Existing processes [ ]

New processes [ ]

(b) Why were such processes transferred ?



## 6.5 Conclusions

The returns of questionnaires from the four groups of participating firms (i.e. Japanese and U.S. subsidiaries in Singapore, parent companies in Japan and the United States) were 100% and all returned questionnaires were correctly completed. Cross-checking of pilot interview findings with equivalent indicators from the questionnaire survey suggested that empirical data from questionnaires generally concurred with descriptive information obtained during interviews. The return of correctly completed questionnaires and the similarity of data obtained for equivalent questions in both pilot interviews and questionnaire survey were interpreted as proof of validity of the questionnaires and the translation. Further, favourable feedback concerning the effectiveness of the questionnaires and interview form were also received during the interviews with U.S. and Japanese subsidiaries in Singapore.

Improvements in the questionnaires and interview form were made based on the discussions and feedback during the interviews. Some minor improvements were made to the survey questionnaires and questions relating to firm productivity and the breakdown of workforce were added to the interview form. In addition, the feedback obtained from pilot study participants concerning adequacy of the research methodology for the purpose of this research were very favourable. The pilot study results suggested that the revised questionnaires, interview form and the research methodology were

adequate for this research on comparative U.S. - Japanese management systems and their transferability to manufacturing industry in Singapore.

## CHAPTER 7

### QUESTIONNAIRE ANALYSIS OF U.S. AND JAPANESE SUBSIDIARIES OPERATING IN SINGAPORE AND THEIR PARENT COMPANIES

#### 7.1 Questionnaire Analysis

The questionnaire analysis was carried out full-time over a period of ten months from 3rd June 1985 to 29th March 1986. Appendices 3A to 3J and appendix 6 contain the questionnaires and the covering letter respectively for the four groups of firms under study. The use of questionnaires was necessary as the four groups of firms were spread over great distances in three different countries. The research design aims to survey at least twenty U.S. parent companies located in the U.S.A., twenty Japanese parent companies in Japan, twenty U.S. subsidiaries in Singapore and twenty Japanese subsidiaries in Singapore making a total of eighty companies.

Twenty eight U.S. subsidiaries and twenty four Japanese subsidiaries in Singapore together with their respective parent companies were approached before the researcher was able to obtain usable data for the total eighty companies from the four industrial sectors. Objections by parent companies and the need to ensure confidentiality of company practices were the main reasons given by eight U.S. subsidiaries and four Japanese subsidiaries which declined to participate in this research. One U.S. company complained of a bad experience in which a researcher misrepresented their views but left Singapore before they could initiate legal proceedings.



Completed questionnaires were returned by about 75 percent of the U.S. and Japanese subsidiaries during the day of interview. Most of the remaining 25 percent of the questionnaires were received within three weeks of the interview. Return of questionnaires from Japanese parent companies in Japan took an average of five weeks whereas American parent companies took an average of seven weeks. All questionnaires received were correctly and fully completed. This could be attributed to the ease of understanding the questionnaires. Another reason was that the American and Japanese expatriates responding to the questionnaires were chief executive officers or their representatives (who must be an expatriate as required by the research methodology) were all senior management staff and therefore thoroughly familiar with the questionnaire topics which concern problems faced by their companies.

## 7.2 Analysis of the questionnaire data

There are numerous techniques for establishing the degree to which two or more variables are related to one another (Stone, 1978:29). One method of determining whether or not variables are related to one another is to assess the extent to which mean levels of the variable differ between or among groups using analysis of variance (ANOVA). Another technique for assessing the extent to which variables are related to one another is to examine the degree to which they correlate with one another. Other techniques include multiple correlation, discriminant function analysis, canonical correlation, and multivariate analysis of variance.

Correlation analysis is a popular statistical technique used in comparative literature. For example, Child and Kieser (1981), Marsh and Mannari (1981), and Hickson et. al. (1974) all use Pearson product-moment correlations to analyse relationships between variables of context (size, technology, etc) and dimensions of organizations (functional specialization, decentralization, autonomy, etc). Correlation analysis was useful in these studies because the main objective was to see whether the variables correlated significantly to suggest distinctive configurations and profiles between the variables studied. However, as defined by the research objectives in chapter one, this is an exploratory study more concerned to explore the relevance of each individual feature per se rather than with aggregation into profiles or configurations. The reason for exploring the transferability of each individual management feature per se is that Singapore's economic success also depends on foreign investments from a wide variety of countries (other than U.S. and Japan) in manufacturing industry which accounts for forty-four percent of total foreign investments. An in-depth exploratory study aiming at identifying features of effective practices for Singapore's manufacturing industry as a whole is therefore more useful than a study of profiles or configurations between U.S. and Japanese management systems. Hence, the research methodology (chapter five) is structured for exploring individual features rather than profiles of management practices.

In this research design, questionnaire data were obtained from four

groups of companies in four industrial sectors and the objective was to compare the mean levels of the variable studied among four groups of companies and among four industrial sectors. It is also possible that a particular group of companies may perform exceptionally well in a specific industrial sector and such joint effects or interactions should preferably be detected by an appropriate method of data analysis. Thus, two-way ANOVA was selected for the analysis of questionnaire data since it provides for the calculation and analysis of joint effects.

Provision was made for collection of data pertaining to each of the four management variables from the four groups of firms in four industrial sectors spread over three countries. The research design (chapter five) enables data for each indicator of the specific management variables to be analysed using two-way analysis of variance (two-way ANOVA). Perceptual data for the two factors i.e. the indicator of the specific management variable and the specific industrial sector were systematically obtained. For each indicator the null hypothesis is that there is no significant differences among the four groups of firms or among the firms categorized into the four industrial sectors. For example, the statement of hypothesis for questionnaire 1, indicator 1 is :-

"There is no significant difference in the environmental conditions as indicated by good attitudes toward persons in authority among the four groups of firms in the four industrial sectors."

Following this, the two-way ANOVA table (an example showing the



detailed calculations is given in appendix 7) presents the statistical test and the analysis of results which also includes the study of joint effects. Analyses of data from questionnaires 1, 2, 3, and 4 are given in sections 7.3, 7.4, 7.5, and 7.6 respectively. After the individual analysis of each indicator and the overall analysis of each management variable, a summary on the questionnaires' findings is presented in section 7.7.

### 7.3 Questionnaire 1: Environmental Conditions

Respondents were requested to describe their opinions of their respective environmental conditions. Ten indicators of environmental conditions were studied. Appendix 3A shows questionnaire 1 which was for surveying U.S. subsidiaries and appendix 3B shows questionnaire 1 with Japanese translation for surveying Japanese subsidiaries. Questionnaire 1(a) which was used for surveying parent companies in the United States is given in appendix 3C and appendix 3D shows questionnaire 1(b) with Japanese translation for surveying parent companies in Japan. Tables-5A to 5J presents the results of two-way analysis of variance for the 10 indicators of environmental conditions. A summary of the questionnaire analysis on environmental conditions is given in section 7.7 after the analysis of the ten indicators.

#### Indicator 1 : Good attitudes toward persons in authority

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the

environmental conditions as indicated by good attitudes toward persons in authority.

#### Analysis of results (Table 5A)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects or interaction between the four groups of firms and four industrial sectors were not significant. Table 5A shows that Japanese subsidiaries have low average of 2.95 compared to the Japanese parent companies average of 4.25 and overall average of 3.65 for the 80 firms surveyed. It can be concluded that Japanese subsidiaries considered the Singaporean workers as lacking in good attitudes toward persons in authority as compared to Japan but U.S. subsidiaries in Singapore considered Singapore workers as having similarly good attitudes toward persons in authority as those in the U.S. However, the four industrial sectors returned almost similar averages ranging between 3.6 to 3.7 for a total of 80 firms.

#### Indicator 2 : Tendency toward teamwork

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the environmental conditions as indicated by tendency toward teamwork.

#### Analysis of results (Table 5B)

Significant differences were detected among the four groups of firms

and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese subsidiaries have a low average of 2.4 compared to the Japanese parent companies average of 4.25 and overall average of 3.23 for the 80 firms surveyed. It can be concluded that Japanese subsidiaries considered the Singaporean workers as lacking substantially in tendency toward teamwork as compared to the parent companies in Japan. In contrast, U.S. subsidiaries considered the Singaporean workers as having a slightly higher tendency toward teamwork as compared to their parent companies in the U.S. The four industrial sectors returned with averages ranging from the lowest of 3.1 for the shipbuilding, automotive, and engineering services sector to 3.35 for the electronics and electrical sector. The slightly higher average of 3.35 could be explained by the greater need of teamwork in mass-production which is inherent to the electronics and electrical industries.

Indicator 3 : Importance of wealth and material gain

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the environmental conditions as indicated by the importance of wealth and material gain in his/her respective country.

Analysis of results (Table 5C)

No significant differences were detected among the four groups of



firms in the four industrial sectors. Joint effects were also not significant. Thus there is no significant difference in the environmental conditions as indicated by the importance of wealth and material gain among the four groups of firms in the four industrial sectors.

Indicator 4 : Literacy level of population

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the environmental conditions as indicated by the literacy level of the population.

Analysis of results (Table 5D)

Significant differences were detected in the literacy level of population as perceived by management in the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned averages of 3.1 and 3.2 respectively as compared to the averages of 4.2 and 3.6 returned by their parent companies. It can be concluded that the literacy level of Singaporean workers is generally lower than the Japanese and American counterparts. The four industrial sectors returned with averages ranging from 3.35 for the shipbuilding, automotive, and engineering services sector to 3.65 for the electronics and electrical sector. The slightly higher literacy level recorded for the electronics and electrical sector could be due to the inherent

need for more skilled and educated workers in this particular sector.

Indicator 5 : Availability of trained or skilled personnel

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of environmental conditions as indicated by the availability of trained or skilled personnel.

Analysis of results (Table 5E)

Significant differences were detected in the availability of trained or skilled personnel among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned averages of 3.3 and 3.45 respectively as compared to the averages of 4.55 and 4.4 returned by their parent companies. It can be concluded that the availability of trained or skilled personnel in Singapore subsidiaries is generally lower than their Japanese and American parent companies. The four industrial sectors returned with averages ranging from 3.85 for the electronics and electrical sector to 4 for the petrochemicals, food, and non-metallic products sector.

Indicator 6 : Availability of other workers

Each participant from the four groups of firms in the four

industrial sectors was requested to describe his/her opinion of the environmental conditions as indicated by the availability of other workers.

Analysis of results (Table 5F)

Significant differences were detected in the availability of other workers among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Both Japanese and U.S. subsidiaries returned an average of 3.85 as compared to the averages of 4.2 and 4.15 returned by their respective parent companies. It can be concluded that the availability of other workers in Singapore is generally lower than those of Japan and the U.S. The first three industrial sectors returned with the same averages of 4 and an average of 4.05 was returned by industrial sector four. Thus the availability of other workers among the four industrial sectors is almost similar.

Indicator 7 : Attitude toward education

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the environmental conditions as indicated by the attitude toward education.

Analysis of results (Table 5G)

Significant differences were detected in the attitude toward



education among the four groups of firms and significant differences were also detected among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned averages of 4.15 and 4.2 respectively as compared to the averages of 4.5 and 3.4 returned by their parent companies. It can be concluded that Japanese workers have better attitude toward education followed by Singaporean workers and lastly the American workers. The four industrial sectors returned with averages ranging from 3.8 for the shipbuilding, automotive, and engineering services sector to 4.25 for the electronics and electrical sector. The better attitude toward education recorded for the electronics and electrical sector could be due to the inherent need of higher skilled and educated workers for this particular sector.

Indicator 8 : Union-labour relationships

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of environmental conditions as indicated by union-labour relationships.

Analysis of results (Table 5H)

Significant differences were detected in the union-labour relationships among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned averages of 4.15 and 4.3 respectively as compared to the

averages of 4.1 and 3.65 returned by their parent companies. It can be concluded that the union-labour relationships in Singapore and Japan is generally better than those of the U.S. The four industrial sectors returned with averages ranging from 4 for the precision engineering, machine tools and industrial engineering sector to 4.1 for the shipbuilding, automotive, and engineering services sector. The good union-labour relationship in Singapore is reflected by the complete absence of strikes for the previous eight years.

Indicator 9 : Rate of annual inflation

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the environmental conditions as indicated by the rate of annual inflation.

Analysis of results (Table 5I)

Significant differences were detected in the rate of annual inflation among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned averages of 4.1 and 4.15 respectively as compared to the averages of 3.8 and 3.45 returned by their parent companies. It can be concluded that the rate of annual inflation in Singapore is generally lower than Japan and the U.S.A. The four industrial sectors returned with averages ranging from 3.8 for industrial

sector one and three to 3.95 for industrial sector two and four.

Indicator 10 : Governmental attitudes toward the manufacturing industries

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the environmental conditions as indicated by the governmental attitudes toward the manufacturing industries.

Analysis of results (Table 5J)

Significant differences were detected in the governmental attitudes toward the manufacturing industries among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned averages of 4.1 and 4.15 respectively as compared to the averages of 4.35 and 3.55 returned by their parent companies. It can be concluded that governmental attitudes toward manufacturing industries are best in Japan followed by Singapore and the U.S.A. The four industrial sectors returned with averages ranging from 3.85 for the shipbuilding, automotive, and engineering services sector to 4.15 for the electronics and electrical sector. The slightly higher level recorded for the electronics and electrical sector could be due to the rapid technological change inherent to this particular sector which in turn requires governmental support.



#### 7.4 Questionnaire 2: Management philosophy

Respondents were requested to describe their opinions of their respective management philosophy. Ten indicators of management philosophy were studied. Appendix 3E contains questionnaire 2 which was used for surveying U.S. subsidiaries located in Singapore and their parent companies in the U.S.A. and appendix 3F contains questionnaire 2 with Japanese translation for surveying Japanese subsidiaries located in Singapore and their parent companies in Japan. Tables 6A to 6J presents the results of two way analysis of variance for the 10 indicators of management philosophy. A summary of the questionnaire analysis on management philosophy is given in section 7.7 after the analysis of the ten indicators.

##### Indicator 1 : Management's concern for employee development

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management philosophy which most closely describes the practices in their firms as indicated by management's concern for employee development.

##### Analysis of results (Table 6A)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Table 6A shows that

Japanese subsidiaries and Japanese parent companies have high averages of 4.2 and 4.45 respectively as compared to the averages of 3.5 for U.S. subsidiaries and 3.6 for U.S. parent companies. It can be concluded that Japanese subsidiaries and their parent company displayed greater management's concern for employee development as compared to U.S. subsidiaries and their parent companies. Among the four industrial sectors, industrial sectors two and three returned the lowest averages of 3.85 while the highest average of 4.1 was returned by the electronics and electrical sector.

Indicator 2 : Employee's perception of company's concern toward individual development

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of management philosophy which most closely describes the practices in their firms as indicated by the employee's perception of company's concern toward individual development.

#### Analysis of results (Table 6B)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned low averages of 2.9 and 2.85 respectively as compared to the averages of 4.3 and 3.25 returned by their parent companies. It can be concluded that employees of Japanese and U.S.

subsidiaries considered management as lacking in concern toward individual development as compared to their parent companies in Japan and the U.S.A. Japanese parent companies also displayed a significantly higher average of 4.3 as compared to 3.25 of U.S. parent companies. The four industrial sectors returned with averages ranging from the lowest of 3.15 for the shipbuilding, automotive, and engineering services sector to 3.45 for industrial sectors one and four. The higher average of 3.45 could be explained by the greater need of technological upgrading and consequently the need for individual development which is inherent to these sectors.

Indicator 3 : Degree of permanent employment

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management philosophy which most closely describes the practices in their firms as indicated by the degree of permanent employment.

Analysis of results (Table 6C)

Significant differences were detected among the four groups of firms and among the four industrial sectors. Joint effects between firms and industrial sectors were also significant. Japanese parent companies returned the highest average of 4.55 followed by averages of 3.5 returned by U.S. parent companies and Japanese subsidiaries. U.S. subsidiaries gave the lowest average of 2.95 which is probably due to the 'hire and fire' policy practised by many U.S. subsidiaries in Singapore.



Significantly lower average of 3.35 was recorded for the shipbuilding, automotive, and engineering services sector as compared to the average of 3.8 for the petrochemicals, food and non-metallic products sector. The low average could be due to the contractual nature of the shipbuilding and service sector. In contrast, the higher average returned by the petrochemicals, food and non-metallic products sector may be attributed to their continuous production process which inherently have a greater need for permanent employees.

The significant firms/industrial sector interaction in terms of the degree of permanent employment could be traced to the exceptionally low averages of 2.2 for U.S. subsidiaries in the electronics and electrical sector and 2.4 for Japanese subsidiaries in the shipbuilding, automotive and engineering services sector. This could be due to the notorious 'hire and fire' policy of most U.S. electronics firms in Singapore and the retrenchment of workers (including those with very long service) by major Japanese shipyards in Singapore during the previous few years of worldwide slump in the shipbuilding sector. In contrast, Japanese subsidiaries in the electrical and electronics sector returned a relatively high average of 4 due to their permanent employment policy. U.S. subsidiaries in the shipbuilding, automotive and engineering sector also returned a relatively high average of 3.5 as there was little need for retrenchment since most of their jobs were carried out by subcontractors.

Indicator 4 : Decision-making by consensus

Each participants from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management philosophy which most closely describes the practices in their firms as indicated by decision-making by consensus.

Analysis of results (Table 6D)

Significant differences were detected in decision-making by consensus among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned averages of 3.3 and 2.25 respectively as compared to the averages of 4.4 and 2.65 returned by their parent companies. It can be concluded that the degree of decision-making by consensus of Japanese subsidiaries is significantly lower than their parent companies but significantly higher than both U.S. subsidiaries and U.S. parent companies. The four industrial sectors returned with averages for 3.10 for sectors one and two and 3.2 for sectors three and four.

Indicator 5 : Degree of autonomy given to the Singapore company

Each participants from the two groups of firms (U.S. and Japanese subsidiaries in Singapore) in the four industrial sectors was

requested to describe his/her opinion of the management philosophy which most closely describes the practices in their firms as indicated by the degree of autonomy given to the Singapore company.

#### Analysis of results (Table 6E)

Significant differences were detected in the degree of autonomy given to the Singapore company between the two groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese subsidiaries returned a low average of 1.8 as compared to the average of 2.6 returned by U.S. subsidiaries. It can be concluded that Japanese subsidiaries in Singapore are given a low degree of autonomy.

#### Indicator 6 : Policies intended to improve employee morale

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management philosophy which most closely describes the practices in their firms as indicated by the policies intended to improve employee morale.

#### Analysis of results (Table 6F)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with averages of 4.1 and 4.05 respectively as



compared to the higher averages of 4.4 returned by their parent companies. The significant difference could be due to fact that most Japanese and U.S. subsidiaries are relatively new as compared to their parent companies and not all fringe benefits could be extended to these relatively new companies. Among the four industrial sectors, the electronics and electrical sector averaged 4.5 compared to the lowest average of 4.1 of the shipbuilding, automotive and engineering services sector.

Indicator 7 : Company-sponsored recreational activities

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management philosophy which most closely describes the practices in their firms as indicated by the company-sponsored recreational activities.

Analysis of results (Table 6G)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with relatively low averages of 3.5 and 3.7 respectively as compared to the averages of 4.1 returned by their parent companies. It can be concluded that Japanese and U.S. parent companies provide better company-sponsored recreational activities than their subsidiaries in Singapore. The four industrial sectors returned with averages ranging from 3.65 for the shipbuilding,

automotive, and engineering services sector to 4.05 for the electronics and electrical sector.

Indicator 8 : Management support for quality control circles or informal group activities

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management philosophy as indicated by the management support for quality control circles or informal group activities.

#### Analysis of results (Table 6H)

Significant differences were detected among the four groups of firms and among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with averages of 3.65 and 3.3 respectively as compared to 4.65 and 4.1 returned by their parent companies. It can be concluded that management support for quality control circles or informal group activities in Singapore subsidiaries is significantly lower than those of their parent companies in the U.S. and Japan. Japanese parent companies also returned a significantly higher average than U.S. parent companies. The exceptionally high average for the Japanese parent companies is reflected by the fact that Japan registers the highest number of quality control circles in the world. The four industrial sectors returned with averages ranging from 3.7 for petrochemicals, food, and non-metallic products sector to 4.25 for electronics and

electrical sector. The higher average for the latter sector could be accounted for by the fact that quality control circles or informal group activities originated from this sector.

Indicator 9 : Solicitation of employee's suggestions

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management philosophy as indicated by the solicitation of employee's suggestions.

Analysis of results (Table 6I)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with averages of 4.3 and 3.5 respectively as compared to 4.75 and 4.15 returned by their parent companies. It can be concluded that Japanese parent companies and their subsidiaries showed substantially higher solicitation of employee's suggestions than U.S. parent companies and their subsidiaries. The four industrial sectors returned with averages ranging from 4.05 for industrial sector two and 4.15 for the electrical and electronics sector.

Indicator 10 : Basis on which the firm gives promotion

Each participant from the four groups of firms in the four



industrial sectors was requested to describe his/her opinion of the management philosophy as indicated by the basis on which the firm gives promotion.

#### Analysis of results (Table 6J)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with averages of 3.5 and 3.55 respectively as compared to 2.4 and 3.75 returned by their parent companies. It can be concluded that Japanese parent companies give promotion on the basis of seniority and performance whereas U.S. parent companies and their subsidiaries have a higher tendency to give promotion on the basis of performance rather than seniority. The four industrial sectors returned with averages ranging from 3.05 for the petrochemicals, food, and non-metallic products sector to 3.3 for the electronics and electrical sector.

#### 7.5 Questionnaire 3: Management functions/practices

Respondents were requested to describe their opinions of their respective management functions/practices. Ten indicators of management functions/practices were studied. Appendix 3G contains questionnaire 3 which was used for U.S. subsidiaries in Singapore and their parent companies in the U.S.A. and appendix 3H contains questionnaire 3 with Japanese translation for surveying Japanese

subsidiaries in Singapore and their parent companies in Japan. Tables 7A to 7J presents the results of the two-way analysis of variance for the 10 indicators of management functions/practices. A summary of the questionnaire analysis on management functions/practices is given in section 7.7 after the analysis of the ten indicators.

Indicator 1 : Planning orientation

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management functions/practices which most closely describes the practices in their firms as indicated by planning orientation.

Analysis of results (Table 7A)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Table 7A shows that Japanese and U.S. subsidiaries have significantly lower averages of 3.75 and 4.05 respectively as compared to the averages of 4.5 for Japanese parent companies and 4.4 for U.S. parent companies. It can be concluded that Japanese and U.S. parent companies displayed better planning orientation than their subsidiaries in Singapore. The lowest averages of 4.15 were returned by industrial sectors one and two and the highest average of 4.3 was returned by the electrical and electronics sector.

Indicator 2 : Quality control

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management functions/practices which most closely describes the practices in their firms as indicated by quality control.

Analysis of results (Table 7B)

Significant differences were detected among the four groups of firms and among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned low averages of 4.25 and 4.0 respectively as compared to the averages of 4.75 and 4.35 returned by their parent companies. It can be concluded that Japanese and U.S. subsidiaries in Singapore lack quality control when compared to their parent companies. Japanese parent companies and their subsidiaries in Singapore also perceived that they have better quality control than their U.S. counterparts. This can be explained by the superior quality of many Japanese products. The electrical and electronics sector returned a higher average of 4.6 as compared to the overall average of 4.34 for the 80 firms surveyed and this could be due to the stringent quality requirements of this sector.

Indicator 3 : Equipment maintenance

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the



management functions/practices which most closely describes the practices in their firms as indicated by equipment maintenance.

#### Analysis of results (Table 7C)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects between firms and industrial sectors were not significant. Japanese parent companies returned the highest average of 4.4 followed by the averages of 4.1 for U.S. parent companies and 3.85 for U.S. subsidiaries. The lowest average of 3.8 was returned by Japanese subsidiaries. It can be concluded that U.S. and Japanese parent companies have better equipment maintenance than their subsidiaries in Singapore. Slightly lower average of 3.95 was recorded for the shipbuilding, automotive, and engineering services sector as compared to the highest average of 4.2 for the electrical and electronics sector.

#### Indicator 4 : Standard settings for production workers

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management functions/practices which most closely describes the practices in their firms as indicated by standard settings for production workers.

### Analysis of results (Table 7D)

Significant differences were detected in standard settings for production workers among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with averages of 3.9 and 4.1 respectively as compared to the averages of 4.1 and 4.45 returned by their parent companies. It can be concluded that standard setting for production workers is more widely practised and carried out more systematically in the U.S. parent company. The four industrial sectors returned with averages ranging from 4 for the shipbuilding, automotive and engineering services sector to 4.25 for the electrical and electronics sectors. This high average for the latter sector could be explained by the necessity of standard settings for production workers in mass-production repetitive type of work.

#### Indicator 5 : Standard settings for supervisory personnel

Each participant from the two groups of firms (U.S. and Japanese subsidiaries in Singapore) in the four industrial sectors was requested to describe his/her opinion of the management functions/practices which most closely describes the practices in their firms as indicated by standard settings for supervisory personnel.

#### Analysis of results (Table 7E)

Significant differences were detected in standard settings for supervisory personnel among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with lower averages of 3.8 and 3.8 respectively as compared to the averages of 4.2 and 4.1 returned by their parent companies. It can be concluded that standard settings for supervisory personnel is more widely practised and done more systematically in Japanese and U.S. parent companies. The four industrial sectors returned with averages of ranging from 3.85 for the shipbuilding, automotive, and engineering services sector to 4.05 for the electrical and electronics sector. The higher average for the latter sector could be explained by the need for standard settings for mass-production type of work inherent to this sector.

#### Indicator 6 : Budgeting and resource allocating

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management functions/practices which most closely describes the practices in their firms as indicated by budgeting and resource allocating.

#### Analysis of results (Table 7F)

Significant differences were detected among the four groups of firms



and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with averages of 3.9 and 3.85 respectively as compared to the higher averages of 4.4 and 4.25 returned by their parent companies. The significant differences may be due to fact that most Japanese and U.S. subsidiaries are relatively new companies as compared to their parent companies and therefore the practices of budgeting and resource allocation are not well developed as compared to their parent companies. Among the four industrial sectors, the electrical and electronics sector averaged 4.2 and the lowest average of 4.0 was returned by the petrochemicals, food, and non-metallic products sector.

Indicator 7 : Managers' perception of subordinates

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management functions/practices which most closely describes the practices in their firms as indicated by the managers' perception of subordinates.

Analysis of results (Table 7G)

Significant differences were detected in the managers' perception of subordinates among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries

returned with very low averages of 3.0 and 2.9 respectively as compared to the averages of 4.35 and 4.1 returned by their parent companies. It can be concluded that managers' perception of subordinates in Japanese and U.S. subsidiaries are much lower than those of their parent companies. This suggests that managers in these subsidiaries perceived that they were less confident in their subordinates. The four industrial sectors returned with close averages ranging from 3.5 for the shipbuilding, automotive, and engineering services sector to 3.75 for the electrical and electronics sector.

Indicator 8 : Difficulty of managing the subsidiary in Singapore

Each participant from the two groups of subsidiaries in the four industrial sectors was requested to describe his/her opinion of the management functions/practices as indicated by the difficulty of managing the subsidiary in Singapore.

Analysis of results (Table 7H)

Significant differences were detected between the two groups of subsidiaries in Singapore. There were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese subsidiaries returned an average of 3.65 as compared to the significantly higher average of 4.1 returned by U.S. subsidiaries. It can be concluded that U.S. subsidiaries have less difficulty in managing the Singaporean workforce as compared to

Japanese subsidiaries. The four industrial sectors returned with averages ranging from 3.7 for the shipbuilding, automotive, and engineering services sector to 4.0 for the electrical and electronics sector.

Indicator 9 : Actions taken to improve efficiency

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management functions/practices as indicated by the actions taken to improve efficiency.

Analysis of results (Table 7I)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with lower averages of 3.35 and 4.25 respectively as compared to the averages of 4.45 and 4.55 returned by their parent companies. It can be concluded Japanese and U.S. subsidiaries in Singapore take less action to improve efficiency as compared to their respective parent companies. This may be due to the substantially lower labour cost in Singapore making efficiency improvement of lesser importance as compared to the U.S. and Japan. The four industrial sector returned with close averages ranging between 4.1 for industrial sector two to 4.25 for the electrical and electronics sector.



Indicator 10 : Coordination of manufacturing activities

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management functions/practices as indicated by the coordination of manufacturing activities.

Analysis of results (Table 7J)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with lower averages of 3.55 and 4.05 respectively as compared to the averages of 4.65 and 4.45 returned by their parent companies. It can be concluded that Japanese and U.S. subsidiaries showed substantially lower degree of coordination of manufacturing activities as compared to their respective parent companies. The four industrial sectors returned with averages ranging from 4.05 for industrial sector two to 4.3 for the electrical and electronics sector.

7.6 Questionnaire 4: Management effectiveness

Respondents were requested to describe their opinions of their respective management effectiveness. Ten indicators of management effectiveness were studied. Appendix 3I contains questionnaire 4 which was used for surveying U.S. subsidiaries located in Singapore

and their parent companies. Appendix 3J contains questionnaire 4 with Japanese translation for surveying Japanese subsidiaries in Singapore and their parent companies in Japan. Tables 8A to 8J presents the results of the two-way analysis of variance for the 10 indicators of management effectiveness. A summary of the questionnaire analysis on management effectiveness is given in section 7.7 after the analysis of the ten indicators.

Indicator 1 : Management ability to attract and retain high-level manpower

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management effectiveness in their firms as indicated by the ability to attract and retain high-level manpower.

#### Analysis of results (Table 8A)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Table 8A shows that Japanese subsidiaries returned a significantly lower average of 3.15 as compared to the average of 4.4 returned by U.S. subsidiaries and the overall average of 4.11 for the 80 firms surveyed. This can be explained by the fact that Japanese subsidiaries pay significantly lower salaries than U.S. subsidiaries and hence lack behind in the ability to attract and retain high-level manpower. The four industrial sectors returned close averages ranging from 4.05 for

industrial sector two to 4.2 for the electrical and electronics sector.

Indicator 2 : Employee's morale and satisfaction in work

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management effectiveness in their firms as indicated by the employee's morale and satisfaction in work.

Analysis of results (Table 8B)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned lower averages of 3.15 and 4.0 respectively as compared to the averages of 4.6 and 4.45 returned by their parent companies. It can be concluded that employee's morale and satisfaction in work at the Japanese and U.S. subsidiaries are lower as compared to their parent companies. Japanese subsidiaries also returned a significantly lower average than U.S. subsidiaries. This could be attributed to the relatively lower salaries paid by the Japanese subsidiaries which adversely affect the employee's morale and satisfaction in work. The four industrial sectors returned very close averages ranging from 4 for the shipbuilding, automotive, and engineering services sector to 4.1 for the electrical and electronics sector.



Indicator 3 : Employee turnover and absenteeism

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management effectiveness in their firms as indicated by the employee turnover and absenteeism.

Analysis of results (Table 8C)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese parent companies returned an exceptionally high average of 4.9 followed by averages of 3.95 for U.S. parent companies and 3.05 for U.S. subsidiaries. The lowest average of 2.5 was returned by Japanese subsidiaries. It can be concluded that U.S. and Japanese parent companies have lower employee turnover and absenteeism than their subsidiaries. The low average returned by Japanese subsidiaries could be partly due to the lower salaries paid by them. A relatively lower average of 3.45 was recorded for the shipbuilding, automotive, and engineering services sector as compared to the highest average of 3.75 for the electrical and electronics sector.

Indicator 4 : Interpersonal relationships in organizational settings

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the

management effectiveness in their firms as indicated by interpersonal relationships in organizational settings.

#### Analysis of results (Table 8D)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with averages of 3.65 and 3.2 respectively as compared to averages of 4.8 and 3.8 returned by their parent companies. It can be concluded that interpersonal relationships in organizational settings are best in Japanese parent companies. Japanese and U.S. subsidiaries also returned significantly lower averages than their parent companies. The four industrial sectors returned with averages ranging from 3.75 for industrial sector two to 4.0 the electrical and electronics sector.

#### Indicator 5 : Departmental relationships

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management effectiveness in their firms as indicated by departmental relationships.

#### Analysis of results (Table 8E)

Significant differences were detected in departmental relationships

among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned lower averages of 4.0 and 3.6 respectively as compared to averages of 4.75 and 4.15 returned by their parent companies. It can be concluded that departmental relationships are significantly better in the parent companies. Japanese subsidiaries and their parent companies also returned significantly higher averages as compared to U.S. subsidiaries and their parent companies. The four industrial sectors returned with averages of ranging from 4 for industrial sector two to 4.4 for the electrical and electronics sector. The higher average for the latter sector could be explained by the need for better departmental relationships for the mass-production type of work which is inherent to this sector.

Indicator 6 : The executive's perception of the firm's overall objectives

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management effectiveness in their firms as indicated by the executive's perception of the firm's overall objectives.

Analysis of results (Table 8F)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S.



subsidiaries returned with averages of 3.4 and 3.45 respectively as compared to the higher averages of 4.55 and 3.85 returned by their parent companies. It can be concluded that executives in Japanese and U.S. parent companies place more importance in the firm's overall objective rather than departmental objective as compared to local Singaporean executive. The exceptionally high average returned by Japanese parent companies indicates that the Japanese executive, in particular, perceives company's objective as being more important than departmental objective. Among the industrial sectors, the electrical and electronics sector averaged 3.9 as compared to the slightly lower averages of 3.75 for industrial sectors one and three.

Indicator 7 : Utilization of high-level manpower

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management effectiveness of their firms as indicated by the utilization of high-level manpower.

Analysis of results (Table 8G)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with lower averages of 3.75, and 4.4

respectively as compared to averages of 4.6 and 4.6 returned by their parent companies. It can be concluded that the utilization of high-level manpower is significantly lower in Japanese subsidiaries as compared to the other three groups of firms. The electrical and electronics sector returned a relatively higher average of 4.6 as compared to 4.34 overall average. This could be due to the need for high-level manpower to cope with the rapid technological change inherent to this sector.

Indicator 8 : Organizational effectiveness in adapting to Singapore environment

Each participant from the two groups of subsidiaries in the four industrial sectors was requested to describe his/her opinion of the management effectiveness in their firms as indicated by the organizational effectiveness in adapting to the Singapore environment.

Analysis of results (Table 8H)

Significant differences were detected between the two groups of subsidiaries and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese subsidiaries returned an average of 3.25 as compared to the significantly higher average of 4.25 returned by U.S. subsidiaries. It can be concluded that U.S. subsidiaries have less difficulty in adapting to the Singaporean environment. The four industrial sectors returned with close averages ranging from 3.6 for the

shipbuilding, automotive, and engineering services sector to 3.9 for the electrical and electronics sector.

Indicator 9 : Attitude of Singaporean workers toward expatriate managers

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management effectiveness as indicated by the attitude of Singaporean workforce toward expatriate managers.

Analysis of results (Table 8I)

Significant differences were detected between Japanese and U.S. subsidiaries and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese subsidiaries returned with significantly lower average of 3.15 as compared to the average of 4.25 returned by U.S. subsidiaries. It can be concluded the Singaporean workforce in U.S. subsidiaries have significantly better attitudes toward their expatriate managers as compared to the Japanese subsidiaries. The four industrial sectors returned with close averages ranging between 3.6 for industrial sector two to 3.8 for the electrical and electronics sector.



Indicator 10 : Efficiency of subsidiary/parent plant

Each participant from the four groups of firms in the four industrial sectors was requested to describe his/her opinion of the management effectiveness as indicated by the efficiency of their plant.

Analysis of results (Table 8J)

Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Joint effects were not significant. Japanese and U.S. subsidiaries returned with averages of 3.2 and 4.35 respectively as compared to averages of 4.75 and 4.35 returned by their parent companies. It can be concluded that U.S. subsidiaries in Singapore and their parent companies have approximately equal plant efficiency. Japanese parent companies, however, showed significantly higher efficiency than their subsidiaries in Singapore. The four industrial sectors returned with averages ranging from 4.05 for industrial sector shipbuilding, automotive, and engineering services sector to 4.25 for the petrochemicals, food, and non-metallic products sector.

7.7 Summary of questionnaire analysis

The questionnaires were designed to obtain information based on the perceptions of participating American and Japanese management personnel regarding each of the 10 indicators of the four management

variables under study ; environmental conditions, management philosophy, management functions/practices, and management effectiveness. Questionnaire data on environmental conditions, management philosophy, management functions/practices, and management effectiveness were analysed statistically in sections 7.3, 7.4, 7.5, and 7.6 respectively. The following is a summary of findings based on statistical analysis and interpretation of data presented in the ANOVA table for each management variable :-

Questionnaire 1: Environmental Conditions (section 7.3)

1. Japanese subsidiaries considered the Singaporean workers as lacking in good attitudes toward persons in authority as compared to their parent companies in Japan but U.S. subsidiaries considered Singaporean workers as displaying just as good an attitude towards authority as workers in their parent companies in the United States. (Table 5A)
2. Japanese subsidiaries considered Singaporean workers as lacking in tendency toward teamwork compared to parent companies in Japan but U.S. subsidiaries considered Singaporean workers as having a slightly higher tendency toward teamwork as compared to workers in their parent companies in the United States. (Table 5B)
3. Importance of wealth and material gain among the four groups of firms in the four industrial sectors is the same. (Table 5C)
4. The literacy level of Singaporean workers is generally lower than the Japanese and American counterparts. (Table 5D)
5. The availability of trained or skilled personnel in Singapore is generally lower than those of Japan and the United States. (Table 5E)
6. The availability of other workers in Singapore is generally lower than those of Japan and the United States. (Table 5F)
7. Japanese workers have better attitudes toward education followed by Singaporean workers and lastly the American workers. Generally, workers from electrical and electronics sector have better attitudes toward education as compared to the other three industrial sectors. (Table 5G)

8. Union-labour relationships in Singapore and Japan is generally better than those of the United States. (Table 5H)
9. The rate of annual inflation in Singapore is generally lower than those of Japan and the United States. (Table 5I)
10. The governmental attitudes toward manufacturing industries is best in Japan followed by Singapore and the United States. (Table 5J)

Japanese subsidiaries in Singapore experienced poorer environmental conditions than in their home country on indicators 1, 2, 4, 5, 6, 7, and 10 but better conditions on indicator 9. U.S. subsidiaries, however, experienced poorer environmental conditions than in their home country on indicators 4, 5, and 6, but better conditions in indicators 2, 7, 8, 9, and 10. Table 9A shows the results of the two-way ANOVA used in testing the overall opinion on environmental conditions. Highly significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Japanese subsidiaries returned a significantly lower average of 6.75 as compared with 8.35 of their parent companies. In contrast, U.S. subsidiaries returned a slightly higher average of 8.0 as compared to 7.25 of their parent companies. However, there were no significant differences among the four industrial sectors.

The analysis shows that Japanese subsidiaries perceived that they experienced significantly poorer environmental conditions in Singapore on seven indicators and significantly better condition on only one out of the ten indicators for environmental conditions. By contrast, U.S. subsidiaries perceived that they experienced



significantly poorer environmental conditions on only three indicators and significantly better environmental conditions on five indicators. Thus the analysis of data on overall opinions also indicates that Japanese subsidiaries perceived that they experienced significantly poorer environmental conditions for their companies' operation in Singapore when compared to Japan. On the other hand, U.S. subsidiaries perceived environmental conditions to be significantly better for their companies' operation when compared to the United States.

In summary, the analysis suggests that Japanese subsidiaries in Singapore experienced more difficulty in adapting to Singapore environmental conditions when compared to U.S. subsidiaries.

Questionnaire 2: Management philosophy (section 7.4)

1. Japanese subsidiaries and Japanese parent companies displayed greater management's concern for employee development as compared to U.S. subsidiaries and their parent companies. (Table 6A)
2. Employees of Japanese and U.S. subsidiaries perceived their companies as lacking in concern toward their individual development as compared to parent companies in Japan and the United States. Generally, employees of Japanese parent companies perceived that their companies showed significantly greater concern toward their individual development. (Table 6B)
3. Generally, Japanese parent companies provide permanent employment and U.S. subsidiaries have the lowest tendency to provide permanent employment. Compared to other industrial sectors, the shipbuilding, automotive, and engineering services sector has lower tendency to provide permanent employment. However, U.S. subsidiaries in the electrical and electronics sector and Japanese subsidiaries in the shipbuilding, automotive and engineering services sector have the lowest tendency to provide permanent employment. (Table 6C)

4. The degree of decision-making by consensus for Japanese subsidiaries is significantly lower than those of Japanese parent companies but significantly higher than both U.S. subsidiaries and U.S. parent companies. (Table 6D)
5. Japanese subsidiaries are given a lower degree of autonomy as compared to U.S. subsidiaries. (Table 6E)
6. Policies intended to improve employee morale are better in Japanese and U.S. parent companies as compared to their subsidiaries in Singapore. (Table 6F)
7. Japanese and U.S. parent companies provide better company-sponsored recreational activities as compared to their subsidiaries in Singapore. (Table 6G)
8. Management support for quality control circles or informal group activities in Singapore subsidiaries is significantly lower than those of their parent companies in the U.S. and Japan. Japanese parent companies and their subsidiaries also returned a significantly higher average than their U.S. counterparts. The electrical and electronics sector showed higher support for quality control circles or informal group activities than the other three industrial sectors. (Table 6H)
9. Japanese parent companies and their subsidiaries showed substantially higher solicitation of employee's suggestions as compared to U.S. parent companies and their subsidiaries. (Table 6I)
10. Japanese parent companies gives promotion on the basis of seniority and performance whereas U.S. parent companies, U.S. subsidiaries and Japanese subsidiaries have a higher tendency to give promotion on the basis of performance rather than seniority. (Table 6J)

Japanese subsidiaries displayed better management philosophy in indicators 1, 3, 4, and 9 as compared to U.S. subsidiaries. In contrast, indicator 5 is the only indicator which U.S. subsidiaries displayed better management philosophy as compared to Japanese subsidiaries. However, both U.S. and Japanese parent companies also displayed better management philosophy on indicators 2, 3, 6, 7, and 8 as compared to their subsidiaries in Singapore. Table 9B shows the results of the two-way ANOVA used in testing overall opinion on management philosophy. Significant differences were detected among



the four groups of firms and there were no significant differences among the four industrial sectors. Japanese subsidiaries returned a significantly higher average of 7.2 as compared to 6.45 of the U.S. subsidiaries. In addition, U.S. and Japanese parent companies returned significantly higher averages of 7.35 and 8.55 respectively as compared to 6.45 and 7.2 of their subsidiaries.

The analysis shows that Japanese subsidiaries perceived that they practised better management philosophy than U.S. subsidiaries in four out of ten indicators described in the questionnaire. There were no significant difference in the perception of the remaining six indicators between Japanese and U.S. subsidiaries. However, both U.S. and Japanese parent companies perceived that they practised a better management philosophy than their subsidiaries in five out of ten indicators. Thus the analysis of data on overall opinion also indicates that Japanese subsidiaries perceived that they practised a better management philosophy as compared to U.S. subsidiaries. In addition, both U.S. and Japanese parent companies perceived that they practised better management philosophy than their subsidiaries in Singapore.

In summary, the analysis suggests that Japanese subsidiaries generally perceive that they practise better management philosophy than U.S. subsidiaries. Further, the analysis also suggests that both Japanese and U.S. parent companies practise better management philosophy as compared to their subsidiaries in Singapore.



Questionnaire 3: Management functions/practices (section 7.5)

1. Japanese and U.S. parent companies displayed better planning orientation than their subsidiaries. (Table 7A)
2. Japanese and U.S. subsidiaries lack quality control when compared to their parent companies. Japanese parent companies and their subsidiaries also displayed better quality control than their U.S. counterparts. (Table 7B)
3. U.S. and Japanese parent companies have better equipment maintenance than their subsidiaries. (Table 7C)
4. Standard setting for production workers is more widely practised and carried out more systematically in the U.S. parent companies and U.S. subsidiaries as compared to their Japanese counterparts. However, both U.S. and Japanese parent companies returned higher averages as compared to their subsidiaries. (Table 7D)
5. Standard settings for supervisory personnel is more widely practised and done more systematically in Japanese and U.S. parent companies. (Table 7E)
6. Japanese and U.S. subsidiaries are relatively new companies as compared to their parent companies and practices of budgeting and resource allocation are not well developed as compared to their parent companies. (Table 7F)
7. Managers' perceptions of subordinates in Japanese and U.S. subsidiaries are much lower than those of their parent companies. The managers in these subsidiaries have less confidence in their subordinates as compared to their respective parent companies. (Table 7G)
8. U.S. subsidiaries have less difficulty in managing the local workforce as compared to the Japanese subsidiaries. (Table 7H)
9. Japanese and U.S. subsidiaries take less action to improve efficiency as compared to their respective parent companies. In addition, Japanese subsidiaries returned a significantly lower average than U.S. subsidiaries. (Table 7I)
10. Japanese and U.S. subsidiaries showed substantially lower degree of coordination of manufacturing activities as compared to their respective parent companies. Japanese subsidiaries also returned a significantly lower average than U.S. subsidiaries. (Table 7J)

Japanese and U.S. parent companies showed better management

functions/practices in all indicators than their subsidiaries in Singapore. In addition, U.S. subsidiaries showed better management functions/practices in indicators 4, 8, 9, and 10 when compared to Japanese subsidiaries. Indicator 2 is the only indicator in which Japanese subsidiaries perform better than U.S. subsidiaries. Table 9C shows the results of the two-way ANOVA used in testing overall opinion on management function/practices. Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Japanese and U.S. subsidiaries returned significantly lower averages of 6.95 and 7.1 respectively as compared to 8.6 and 7.9 of their parent companies.

The analysis suggests that U.S. and Japanese parent companies perceived that they have better management function/practices than their subsidiaries in all indicators described in the questionnaire. U.S. subsidiaries perceived that they have better management function/practices than Japanese subsidiaries in four out of the total of ten indicators. In contrast there is only one indicator (quality control) in which Japanese subsidiaries perceived that they are better than U.S. subsidiaries. The analysis of overall opinion also suggests that U.S. and Japanese parent companies perceived that they have better management function/practices than their subsidiaries.

In summary, the analysis suggests that management function/practices of U.S. and Japanese parent companies are superior to their subsidiaries. It also suggests that U.S. subsidiaries perceive



they have better management function/practices than Japanese subsidiaries.

Questionnaire 4: Management effectiveness (section 7.6)

1. Japanese subsidiaries lack behind in the ability to attract and retain high-level manpower as compared to the other three groups of firms. (Table 8A)
2. Japanese and U.S. subsidiaries have lower employee morale and satisfaction than their respective parent companies. Japanese subsidiaries also returned a significantly lower average than U.S. subsidiaries. (Table 8B)
3. U.S. and Japanese parent companies have lower employee turnover and absenteeism than their subsidiaries. Japanese parent companies have exceptionally low employee turnover and absenteeism. U.S. subsidiaries also have significantly lower employee turnover and absenteeism as compared to Japanese subsidiaries. (Table 8C)
4. Interpersonal relationships in organizational settings are best in Japanese parent companies. Japanese and U.S. parent companies also displayed better interpersonal relationships in organizational settings than their subsidiaries. In addition, Japanese subsidiaries also returned a significantly higher average than U.S. subsidiaries (Table 8D)
5. Departmental relationships in U.S. and Japanese parent companies are significantly better than their subsidiaries in Singapore. Japanese subsidiaries and their parent companies also returned significantly higher averages than U.S. subsidiaries and parent companies. (Table 8E)
6. Executives in Japanese parent companies perceive the company's objective as more important than departmental objective. (Table 8F)
7. Utilization of high-level manpower in Japanese subsidiaries is significantly lower than the other three groups of firms. (Table 8G)
8. U.S. subsidiaries have less difficulty in adapting to the Singapore environment. (Table 8H)
9. The Singaporean workforce in U.S. subsidiaries have significantly better attitude toward their expatriate managers as compared to Japanese subsidiaries. (Table 8I)



10. U.S. subsidiaries and their parent companies have approximately equal plant efficiency. Japanese subsidiaries recorded the lowest efficiency among the four group of firms although their parent companies have the highest efficiency. (Table 8J)

U.S. subsidiaries performed better than Japanese subsidiaries in indicators 1, 2, 3, 7, 8, 9, and 10 with indicators 4 and 5 as the only two exceptions in which Japanese subsidiaries performed better. In addition, both U.S. and Japanese parent companies performed better than their subsidiaries on indicators 2, 3, 4, and 5. Table 9D shows the results of the two-way ANOVA used in testing the overall opinion on management effectiveness. Significant differences were detected among the four groups of firms and there were no significant differences among the four industrial sectors. Japanese and U.S. subsidiaries returned significantly lower averages of 6.1 and 8.0 respectively as compared to 8.65 and 8.1 of their parent companies.

The analysis shows that U.S. subsidiaries perceived that they have better management effectiveness in seven out of the total of ten indicators described in the questionnaire. In contrast, Japanese subsidiaries perceived that they have better management effectiveness than U.S. subsidiaries in only two out of ten indicators. Both U.S. and Japanese parent companies also perceived that they have better management effectiveness than their subsidiaries.

In summary, the analysis suggests that management effectiveness of U.S. subsidiaries are higher than those of Japanese subsidiaries.

It also suggests that both U.S. and Japanese parent companies have higher management effectiveness than their subsidiaries.

## 7.8 Conclusions

The results of the questionnaire analysis presented in this chapter shows that the research design could be used successfully to analyse the perceptual data obtained from participating American and Japanese management personnel regarding the four management variables under study; environmental conditions, management philosophy, management functions/practices and management effectiveness. The statistical analysis of questionnaire data using two-way ANOVA enables the differences among four groups of firms and differences among four industrial sectors to be detected and studied. In addition, the research design and the two-way ANOVA provide for the analysis of joint effects between the four groups of firms and the four industrial sectors. This is extremely useful in detecting special characteristics of a specific group of firms in a particular industrial sector. It was anticipated that there would be some interactions between nationality and sector, but the only case emerging concerned the degree of permanent employment (table 6C) in section 7.4 where U.S. subsidiaries in electronics and electrical sector and Japanese subsidiaries in shipbuilding sector were shown to have the lowest tendency to provide permanent employment. Finally, the analysis of the overall opinion (table 9A, 9B, 9C, and 9D) on each of the four management variables given in section 7.7 serves as a checking device on the overall findings

summarized from analyses of the 10 indicators of each management variable.

The questionnaire analysis shows that the research design has enabled perceptual data on the four management variables to be systematically collected and analysed. Based on the results of the questionnaire analysis, it can be suggested that Japanese and U.S. parent companies performed significantly better than their subsidiaries in Singapore in all the four management variables studied with the exception that U.S. subsidiaries perceived that environmental conditions in Singapore to be significantly better for their companies' operation when compared to the United States. In addition, the questionnaire analysis suggests that U.S. subsidiaries have less difficulty in adjusting to Singapore's environmental conditions, have better management function/practices and displayed higher management effectiveness as compared to Japanese subsidiaries in Singapore. However, Japanese subsidiaries perceived that they have a better management philosophy than U.S. subsidiaries. The findings from the questionnaire analysis are further evaluated in chapter 9 by comparing them with the findings of other researchers discussed in the literature review and the findings of the interview analysis now reported in chapter 8.



## CHAPTER 8

### INTERVIEW ANALYSIS OF U.S. AND JAPANESE SUBSIDIARIES

#### OPERATING IN SINGAPORE

##### 8.1 Interview analysis

The interview analysis for the main study was carried out full-time over a period of approximately one year from 3rd June 1985 to 15th May 1986 using the final interview form presented in Appendix 4. The research design in section 5.4 aims to obtain interview data from five U.S. subsidiaries and five Japanese subsidiaries from each of the four industrial sectors. The final interview analysis involved 40 subsidiaries based in Singapore firms was carried out on two groups of firms in the four industrial sectors as follows :-

Two groups of firm	Industrial sectors			
	1	2	3	4
1 U.S. subsidiaries in Singapore	5	5	5	5
2. Japanese subsidiaries in Singapore	5	5	5	5

The interviews for the main research study were carried out after the results from the pilot study had been analysed. Every participating organizations were informed that the interviewee must be an expatriate. All interviews were with the chief executive of the companies with the exception of three Japanese and five U.S. subsidiaries where the chief executive assigned an expatriate

assistant or an expatriate senior manager to represent him. During the period of the main study Singapore was undergoing severe economic depression and most manufacturing firms were operating well below their capacities. Interviews with chief executives were therefore easier to obtain.

The subsidiaries were first contacted by telephone and informed of the topics of the research. A number of firms declined to participate in the research citing that it was not the policy of the company to reveal the kind of information requested by the researcher. Some firms were not suitable because expatriate managers were not available for the interviews. A total of twenty eight U.S. subsidiaries and twenty four Japanese subsidiaries were approached before the researcher was able to achieve the target of interviewing at least 20 U.S. subsidiaries and 20 Japanese subsidiaries as scheduled in the research design described in section 5.4.

The appointments for the interviews were made approximately two weeks in advance. The covering letter (appendix 6) stating appointment time and date together with all questionnaires and the interview form were immediately posted to the company to confirm the interview when an appointment was granted by the company. This gave the chief executive at least ten days to answer the questionnaires and to go through the interview form. The average interview took approximately two hours and responses were recorded in longhand. As in the pilot study, all interviewees do not allow the tape-recording of interviews. On the completion of the interview, the respondents

were requested to return the survey questionnaires. At the same time the respondents were requested to write to their parent companies asking for the return of completed questionnaires surveying the four management variables. Using this approach, all survey questionnaires were returned to the researcher within two months of the interview. The questionnaire analysis is given in the previous chapter.

Permission to interview workers selected randomly from a number of the companies involved in the research was also requested via telephone at a later stage to verify the accuracy of the data collected. It was found that the data obtained by the questionnaires and interview were generally accurate.

## 8.2 Problems encountered during the interview and follow-up investigations

The number of firms interviewed and completed questionnaires received from each of the four industrial sectors are as follows:

	Number of firms interviewed	Number of survey questionnaires returned
1. Parent companies in the U.S.	-	5
2. U.S. subsidiaries in Singapore	5	5
3. Japanese subsidiaries in Singapore	5	5
4. Parent companies in Japan	-	5



No problem was encountered in collecting data from firms in industrial sectors one and two. The problems encountered by the researcher in industrial sectors three and four are as follows:

Industrial sector 3: Shipbuilding, automotive, engineering services

Information given by some companies concerning their policies on retrenchment were contradictory to actions taken by the companies very soon after the interview. Example : The managing directors of two large Japanese shipyards mentioned that their policies were that of no retrenchment and that workers would only be redeployed for other jobs during times of low demand. However, approximately one-third of each shipyard workforce were retrenched one month later in September 1985. Employees of more than 10 years of loyal service with the companies were among those who were retrenched. One of the companies mentioned that those workers retrenched were below average and that selection of the workers to be retained was based on performance and not on seniority. This company emphasized that their policy was to consider both performance and seniority. But because of the difficulty in recruiting skilled workers, the company needed to deviate from their policy in this particular instance by retaining high performance workers. Follow-up investigations also revealed that the policy of no retrenchment was still enforced in mid-1985. However extremely bad economic conditions in the marine industry inevitably forced the companies to change their policies to avoid closing down the companies. It was explained that even parent companies in Japan would have to resort to the same

measures if faced with the same situation. On the contrary, U.S. subsidiaries in this industry need not resort to retrenchment as subcontractors carried out a high proportion of their work. However, these U.S. subsidiaries indicated that retrenchment would be resorted to if necessary to maintain the profitability of the company. These investigations suggested that Japanese subsidiaries would retrench workers only if the survival of their companies was at stake whereas U.S. subsidiaries may resort to retrenchment to maintain profitability.

#### Industrial sector 4 : Electronics and Electrical

A personnel director of a major U.S. subsidiary mentioned during the interview in August 1985 that the firm was doing very well and that there would not be any retrenchment in the next two years. However, one month later, in September 1985, 400 of the 1600 employees were retrenched and the company switched to 4-day week. Follow-up investigations indicated that the decision was taken by the parent company and the personnel director had no knowledge that the company needed to carry out the retrenchment because of the low demand for their products for the coming year.

Another major U.S. subsidiary retrenched 5000 employees during the period June to November 1985. The R & D division was also closed in October 1985. The number of employees peaked at 15,000 in 1983 but stood at 8,000 in November 1985. The target is to reduce the number of employees to 5,000. Follow-up interviews and investigations indicated that the company is shifting a substantial part of its

operations to a neighbouring country because of the lower wage cost in order to maintain its profitability.

Possibly, the worst case was that of a U.S. subsidiary manufacturing home appliances. The President & Managing Director of the firm was interviewed in July 1985. He stressed that there would be no retrenchment in the near future. However, approximately 20% of the total workforce of 1400 were retrenched 3 days later. Follow-up investigations indicated that the decision was taken by the parent company.

In contrast, a Japanese subsidiary manufacturing home appliances was the only exception in this Japanese group of subsidiaries to retrench 400 employees (approximately one-third of its workforce). The follow-up interviews and investigations indicated that the U.S. subsidiaries would resort to retrenchment or shifting their operation to another country to maintain profitability whereas the Japanese subsidiaries would retrench only if the survival of the company was at stake. Another finding was that it seemed that the executives of U.S. subsidiaries in Singapore were given a low degree of autonomy on the issue of retrenchment.

### 8.3 Interview Findings

Interview analysis forms a substantial part of this research. The analysis of the data obtained from the interviews and the findings



of the interviews are presented systematically in the following sequence :

- 8.3.1. Calculation of firm productivity
- 8.3.2. Summary of employment data
- 8.3.3. Firm by firm analysis
- 8.3.4. Sector by sector analysis
- 8.3.5 Finding based on interviews of 40 firms

#### 8.3.1 Calculation of firm productivity

The discussion in section 4.1 shows that it is necessary to include an effectiveness criterion for this study. Schollhammer (1969) suggests that firm productivity (input and output relationships) can be used as a major indicator of firm efficiency. For the purpose of this research firm productivity is the most appropriate effectiveness criteria and the factors chosen for investigating firm productivity are labour productivity and capital productivity since all the firms involved in the research belong to the manufacturing sector. The definitions used are :-

$$\text{Labour productivity} = \frac{(\text{Output} - \text{Input}) \text{ per annum}}{\text{Number of employees}}$$

$$\text{Capital productivity} = \frac{(\text{Output} - \text{Input}) \text{ per annum}}{\text{Capital expenditure on machinery and equipment}} \times 100\%$$

Some of the subsidiaries interviewed declined to reveal this particular information as they considered it to be highly sensitive and therefore to be kept strictly confidential and this apply even to their own staff. The number of firms from the two groups of subsidiaries in the four industrial sectors which gave information on productivity for 1984 are as follows :-

Four groups of firm	Industrial sectors			
	1	2	3	4
1. U.S. subsidiaries in Singapore	2	3	3	2
2. Japanese subsidiaries in Singapore	3	3	2	3

The data given by the 10 U.S. subsidiaries and 11 Japanese subsidiaries based in Singapore are summarized below :-

#### Labour Productivity

The labour productivity of each company and the average labour productivity calculated for the U.S. and Japanese subsidiaries in the four industrial sectors given in Singapore dollars for 1984 are given in the following table :-

Two groups of firms	Four industrial sectors			
	1	2	3	4
1. U.S. subsidiaries in Singapore	(1A) \$230500	(2A) \$32454	(3A) \$38937	(4A) \$30186
	(1B) \$185064	(2B) \$40317	(3B) \$34330	(4B) \$29680
		(2C) \$29034	(3C) \$35834	
Average	\$207782	\$33935	\$36367	\$29933
2. Japanese subsidiaries in Singapore.	(1JA) \$168000	(2JA) \$24719	(3JA) \$25664	(4JA) \$28579
	(1JB) \$55985	(2JB) \$34715	(3JB) \$26902	(4JB) \$23812
	(1JC) \$100108	(2JC) \$29915		(4JC) \$32755
Average	\$108031	\$29783	\$26283	\$28382

The two U.S. subsidiaries in industrial sector one are identified by the symbols (1A) and (1B) and three Japanese subsidiaries in industrial sector one are identified by (1JA), (1JB), and (1JC). The remaining subsidiaries are similarly identified as shown in the above table. Labour productivity is given in Singapore dollars and is calculated by using the data obtained from sections III and IV of the interview form. The definition used in the calculation is :-

$$\text{Labour productivity} = \frac{(\text{Output} - \text{Input}) \text{ in Singapore dollars per annum}}{\text{Number of employees}}$$



## Capital Productivity

The capital productivity for each company and the average capital productivity calculated for the U.S. and Japanese subsidiaries in the four industrial sectors are as follows :-

Two groups of firms	Four industrial sectors			
	1	2	3	4
1. U.S. subsidiaries in Singapore	(1A)	(2A)	(3A)	(4A)
	20%	21%	17%	29%
	Shifts*	3	2	1
	(1B)	(2B)	(3B)	(4B)
	22%	42%	15%	23%
	Shifts*	3	2	1
		(2C)	(3C)	
		45%	13%	
		2	1	
Average	21%	36%	15%	26%
2. Japanese subsidiaries in Singapore	(1JA)	(2JA)	(3JA)	(4JA)
	10%	28%	14%	17%
	Shifts*	3	2	1
	(1JB)	(2JB)	(3JB)	(4JB)
	15%	23%	12%	21%
	Shifts*	3	2	1
	(1JC)	(2JC)		(4JC)
	11%	54%		16%
	Shifts*	3	2	1
Average	12%	35%	13%	18%

\*The number of working shifts used by the company.

Capital productivity shown in the above table is given as a percentage of capital expenditure on machinery and equipment and is calculated by using the data obtained from sections II and III of the interview form. The number of working shifts in each firms is also recorded. The capital productivity for each firm is calculated using the following definition :-

$$\text{Capital productivity} = \frac{(\text{Output} - \text{Input}) \text{ in S\$ per annum}}{\text{capital expenditure on machinery and equipment in S\$}} \times 100\%$$

#### 8.3.2 Summary of employment data

Employment data were obtained form section IV of the interview form and the employment figures and percentages were rounded to the nearest one per cent for the four industrial sectors. The following tables show the summary of employment data for the 10 U.S. and 11 Japanese subsidiaries :-

U.S. subsidiaries in Singapore

Type of employees

Ind. sector	Company	Non-Managerial	Managerial	Singaporean	Non-Singaporean
1.	1A	432 (86%)	71 (14%)	473 (94%)	30 (6%)
	1B	108 (85%)	19 (15%)	121 (95%)	6 (5%)
Total		540 (86%)	90 (14%)	594 (94%)	36 (6%)
2.	2A	79 (91%)	8 (9%)	84 (97%)	3 (3%)
	2B	516 (91%)	52 (9%)	558 (98%)	10 (2%)
	2C	1470 (95%)	81 (5%)	1175 (76%)	376 (24%)
Total		2065 (94%)	141 (6%)	1817 (82%)	389 (18%)
3	3A	192 (93%)	15 (7%)	182 (88%)	25 (12%)
	3B	552 (85%)	100 (15%)	604 (93%)	48 (7%)
	3C	91 (90%)	10 (10%)	100 (99%)	1 (1%)
Total		835 (87%)	125 (13%)	886 (92%)	74 (8%)
4	4A	302 (86%)	48 (14%)	342 (98%)	8 (2%)
	4B	1612 (87%)	236 (13%)	1709 (92%)	139 (8%)
Total		1914 (87%)	284 (13%)	2051 (93%)	147 (7%)



Japanese subsidiaries in Singapore

Type of employees

Ind. Sector	Company	Non-Managerial	Managerial	Singaporean	Non-Singaporean
1	1JA	537 (95%)	29 (5%)	389 (69%)	177 (31%)
	1JB	73 (88%)	10 (12%)	73 (88%)	10 (12%)
	1JC	103 (92%)	9 (8%)	86 (77%)	26 (23%)
Total		713 (94%)	48 (6%)	548 (72%)	213 (28%)
2	2JA	176 (90%)	20 (10%)	186 (95%)	10 (5%)
	2JB	275 (96%)	11 (4%)	208 (73%)	78 (27%)
	2JC	1479 (95%)	79 (5%)	1138 (73%)	420 (27%)
Total		1930 (95%)	110 (5%)	1532 (75%)	508 (25%)
3	3JA	245 (84%)	45 (16%)	255 (88%)	35 (12%)
	3JB	366 (81%)	84 (19%)	369 (82%)	81 (18%)
Total		611 (83%)	129 (17%)	624 (84%)	116 (16%)
4	4JA	460 (95%)	26 (5%)	440 (91%)	46 (9%)
	4JB	1450 (96%)	66 (4%)	1427 (94%)	89 (6%)
	4JC	212 (94%)	14 (6%)	214 (95%)	12 (5%)
Total		2122 (95%)	106 (5%)	2081 (93%)	147 (7%)

### 8.3.3 Firm by firm analysis

The management philosophy, practices, and effectiveness of 8 U.S. subsidiaries and 8 Japanese subsidiaries which provided the data on productivity were examined firm by firm to establish whether there are any tendencies of a possible link with the firm productivity. Subsidiaries in industrial sector 1 are excluded from this analysis. The two U.S. subsidiaries and three Japanese subsidiaries in industrial sector 1 which gave the data on labour productivity, capital productivity and employment belong to the petrochemical and chemical group. In view of the insistence by the companies concerned that confidentiality must be maintained, the description of the individual company has been omitted to safeguard the confidentiality of the identities of the companies which provided the data because there are very few such companies in Singapore. The two U.S. subsidiaries and three Japanese subsidiaries were again approached in July 1986 for permission to publish the company profile in generalized form. All the subsidiaries declined to give permission for any publications describing the company because Singapore is a very small country and with the limited number of companies in this sector the identity of the company together with the description of its problems would be revealed by the description of the company profile even in the generalized form.

#### Industrial Sector 2

##### Company 2A

This U.S. subsidiary started its manufacturing and assembly

operations in the 1970's producing machine tools. Its production capacity was increased in the 1980's. New production machinery were introduced and workers were retrained to operate these new machinery. With the increase in capital investment the company switched from one shift to two-shift operations to maximize the return on investment. In 1986, the inventory control and production scheduling were also computerized. Skilled and semi-skilled workers were recruited by the company. Some of the better technicians were sent for 3 to 6 months training in the U.S. but the majority of the training was carried out on-the-job in the Singapore plant.

The parent company provides the technological know-how for the manufacture of simple components and the assembly of the products. The sophisticated parts are imported from the parent company. Company 2A is presently capable of carrying out production process modifications. However, in recent years the demand for the company's products has dropped by about 30% because of competition from Japanese manufacturers.

The company's management is result-oriented. Employees' promotion and remuneration are based on performance and to a small extent seniority. The company adopts the same management philosophy and organizational structure as their parent company. The company had retrenched some of its excess workers on two occasions during periods of low demand to maintain profitability. The working attitude, productivity, quality of work, and teamwork of the Singaporean workforce were assessed as good. Scrap or rejects are



lower than those of the parent company and the managing director did not experience difficulty in controlling the workforce. The company pays well by Singapore standard and annual labour turnover is around six per cent per annum.

#### Company 2B

Company 2B, is a U.S. subsidiary which began its manufacturing operation in the early 1970's. From the early 1970's to the mid 1970's the company manufactured simple components. From the mid 1970's more complicated components were manufactured. In the late 1970's heat treatment processes began and more sophisticated components were made. The company acquired the ability to design and modify the manufacturing processes in the 1980's. The company invested heavily in the production machinery and had been working two shifts since its incorporation to maximize the return on investment.

The company recruits mainly craftsmen and technicians fresh from vocational institutes or polytechnics and provides them with approximately one year of on-the-job training because of the specialized nature of work done in the factory. However, experienced worker is always preferred during recruitment. The better workers are given overseas training in the parent company. The company's management is result-oriented. Employees' promotion and remuneration are based mainly on performance and to a very small extent seniority. Workers who performed poorly are either terminated or encouraged to leave the company.

The company adopts the same management philosophy and organizational structure as their parent company. Working attitude, productivity and quality of work of the average Singaporean workers were judged to be better than those of their counterparts in the parent company. Lower product defective percentage was also recorded by the Singapore plant. The management described the Singaporean workforce as being very easy to handle and productive. Labour turnover is described as negligible (approximately 1% per annum) due mainly to the relatively high wages paid by the company. The company has not retrenched any worker since it started its operation in Singapore. However, the company stressed that it will follow the parent company's policy to retrench excess workers if it is necessary during the times of low demand.

#### Company 2C

Company 2C is a U.S. subsidiary incorporated in the early 1970's. From the early 1970's to mid 1970's the company manufactured simple components for export to the U.S. parent company. End products were manufactured after the mid 1970's. All design and development of new products are done by the U.S. parent company. Low cost automation, computerized inventory control and accounting were introduced in the 1980's. The company has been working 2 shifts since it began operation to obtain maximum return on investment in the production machinery.

The company had retrenched workers on a number of occasions during

times of low demand. Employees' remuneration and promotion are based mainly on performance. The company pays relatively well by Singapore standards. Annual labour turnover is approximately eleven per cent per annum. The high labour turnover is mainly caused by the 'hire and fire' policy of the company which has resulted in low workers' morale. The company admitted that most employees would leave the company if given a better offer by another company because of the 'hire and fire' policy.

The company adopts the same management philosophy and organizational structures as its parent company. The productivity, working attitude, and quality of work of the average Singaporean worker were described as equal to those of their counterparts in the parent company. However, teamwork is not as good as the parent company because of the language barrier of the Singaporean multi-racial workforce. The company complained that the wages in Singapore have been rising too rapidly and its operation may be moved to neighbouring countries where the wages are lower to maintain the company's profits. The company serves as a production facility to the parent company and moving to a neighbouring country with lower labour cost could be done quite easily. In fact the company mentioned that the ease of setting up and moving out was a factor considered by the parent company in their decision to invest in Singapore.

#### Company 2JA

Company 2JA is a Japanese subsidiary incorporated in the early



1970's. The plant then was about one-third its present size. Expansion occurred in the mid 1970's and mid-1980's. In the 1970's the company manufactured the basic components and carried out the final assembly work with parts imported from the parent company. Following the company's expansion in the mid-1980's, the company became almost self-sufficient and is presently producing 95% of the components required for the complete assembly. The remaining 5% is imported from Japan.

The company was set up by Japanese engineers and all the technological know-how is provided by the parent company. The company prefers to recruit workers fresh from polytechnics and schools. On-the-job training is provided by the company and the better workers are given overseas training in the parent company. Company 2JA is presently capable of carrying out minor design modifications. The company has been working 2 shifts since it began operation in Singapore to obtain maximum return on investment in the production machinery. Following the parent company's policy of no retrenchment of workers, Company 2JA had not retrenched any workers even during the times of very low demand. During such times, the company normally worked on three-day week and workers were encouraged to take all their annual leave. Workers also suffered a reduction of salary of up to twenty percent during such times.

The company found it difficult to adopt the same management philosophy as their parent company. A number of major adaptations were made to suit the Singaporean workforce. The morning exercise

and singing of company song were abolished after a number of futile attempts to introduce them in the subsidiary in Singapore. Employees' remuneration and promotion are based on both performance and seniority instead of placing more emphasis on seniority. Promotions were also accelerated to keep the better workers. The productivity, working attitude and quality of work of the average Singaporean worker were described as inferior to those of the Japanese counterparts. A major complaint is that Singaporean workers on the average are very individualistic and are bad team workers as compared to the Japanese. The company pays a relatively low salary which resulted in a relatively high labour turnover of approximately 20% per annum. According to the company the majority of the workers left because they were offered higher salary elsewhere although without the security of lifetime employment.

#### Company 2JB

The company was incorporated in the early 1970's. The company has been working 2 shifts since it began operation to obtain maximum return on investment on the production machinery. The parent company is one of the largest machinery manufacturers in the world. In the beginning a group of local workers with Trade Certificates or Higher School Certificates were recruited and sent to Japan for training. At the end of the nine-month training they returned to Singapore accompanied by other key Japanese engineers to set up the factory in Singapore. Most of the local pioneers have since left the company for better paying jobs elsewhere. Presently the factory relies on Japanese engineers to carry out the training of local

workers whenever a new production process or new product is introduced.

From the early 1980's the company was able to carry out product development and production process design under the leadership of a Japanese manager. More than 70 per cent of the components are produced in the Singapore factory and approximately 20 per cent (mainly control units) are imported from the Japanese parent company. The remaining 10 per cent of components are secured from local subcontractors. The company experiences difficulty securing good quality components from local subcontractors. To help the subcontractors, the company sends its engineers to train the subcontractors' workers whenever the need arises.

The company usually recruits workers fresh from polytechnics and schools. The managing director stressed that it is easier to train and indoctrinate fresh graduates in the Japanese work ways. The analogy he gave was that "a young bamboo is flexible and can be bent but an old bamboo is rigid and will break in bending". The new recruits are normally given one year on-the-job training. The better workers are given overseas training in the parent company. The company found it very difficult to adopt the same management philosophy as their parent company. Major adaptations and changes were made to suit the Singaporean workforce. The morning exercise and singing of company song were abolished after a number of futile attempts to introduce them to the Singaporean workforce. Employees' remuneration and promotion are heavily based on performance instead



of emphasizing on seniority. The managing director expressed disappointment that the average Singaporean worker would not work hard if remuneration and promotion were to be based on seniority. Promotions were also accelerated to keep the the better workers. The company pays a relatively low salary which resulted in a high labour turnover rate of approximately 30 per cent per annum. The relatively low productivity and poor quality due to the high labour turnover are the main problems faced by the company. A relatively high percentage of foreign workers were employed particularly in the 2nd shift. The productivity, working attitude, quality of work, and teamwork of the Singaporean worker were described as inferior to the Japanese worker.

Most of the workers who left the company cited poor remuneration, poor working condition and slow promotion as their main reasons. The company's policy of lifetime employment do not appear to have any effect on the labour turnover rate.

#### Company 2JC

Company 2JC was set up in the early 1970's to produce components for the parent company in Japan. The company has been working 2 shifts since it began operation. In the mid 1970's the company was expanded and production capacity was doubled. In the early 1980's the company was again expanded. In the mid 1980's, fully automated production lines were used for some products. The expansion is characterized by three stages. One, there has been expansion in terms of bigger scale of operations rather than the diversification

of products. Second, backward integration to produce more sophisticated components which were previously imported from Japan. The third stage is the upgrading and increased automation of the production facility.

During the start-up stage a group of local workers were sent to Japan for one year training. Some Japanese engineers together with this group of key local workers set up the factory in the early 1970's. About half of this group of key local workers have since left the company for better jobs in other companies. The company prefers to recruit workers fresh from universities, polytechnics and schools. The greater ease in training fresh workers and lower starting salary were the main reasons. The managing director feels that the productivity, working attitude, and quality of work of the average Singaporean worker is slightly below those of the Japanese counterparts. The individualistic character of the Singaporean workers also make them bad team workers as compared to the Japanese. The company found it difficult to adopt the same management philosophy as their parent company. Major adaptations and changes were made to suit the Singaporean workforce. The morning exercise and singing of the company song were made compulsory. However, the complaint was that most employees refused to sing the company song and as a compromise the song was tape-recorded and played daily over the public address system before starting and stopping work. Extra training to enable workers to sing the company song and translation of the Japanese song to English appeared to be futile.

The company pays an average salary as compared to other factories. Employees' remuneration and promotion are based on both performance and seniority. Promotions were accelerated to keep the better workers. The labour turnover of 25 per cent per annum is relatively high and is a major problem faced by the company. A relatively high percentage of foreign workers have to be employed for the 2nd shift. The company follows the parent company's policy of lifetime employment system and has not retrenched any worker since it started its operation in Singapore. However, the labour turnover rate remains very high as the average Singaporean worker prefers high salary to job security.

#### Company 3A

Company 3A is a U.S. subsidiary incorporated in early 1970's. It also acts as a regional office for the East Asian region. The company specializes in shipbuilding and oilfield equipment. The manufacturing process is jobbing in nature and the company works single shift. During the peak demand periods the company resorts to working overtime and employing sub-contractors.

During the start-up stage, fresh graduates, experienced engineers and other skilled workers were recruited by the company. The company, however, prefers to employ experienced workers to save time and money in training. One year overseas training in the parent company was provided for the key staff because of the specialized nature of the business. The parent company provides the technology and designs for the products manufactured in the subsidiary. There



is, however, a design section in company 3A which is capable of carrying out modifications to standard designs to meet the customer's needs.

Company 3A adopts the same management philosophy and organizational structure as their parent company. Employees' promotion and remuneration are based mainly on performance and to a small extent seniority. The company is satisfied with the productivity and quality of work of local workers. According to the managing director, one would find very little difference between the subsidiary and parent company except for the Research and Development Division. The company has not retrenched any worker to date although the managing director stressed that retrenchment will be carried out if necessary to maintain the company's profits. Retrenchment is mainly avoided by the use of sub-contractors to cope with the periods of high demand. In this way, the company ensures that there are enough jobs for the workers during the low demand period. The productivity, working attitude and quality of work of the average Singaporean worker were described as comparable to those of their counterparts in the parent company. Singaporean workforce was described as easy to manage and control. However, teamwork is said to be poor. The company pays well by Singapore standard and the labour turnover rate is relatively low at 3% per annum.

#### Company 3B

Company 3B is a U.S. subsidiary incorporated in the early 1970's as part of the U.S. parent's company strategy to compete in the East.

The company specializes in shipbuilding and oilfield equipment. Manufacturing process is jobbing in nature and the company works single shifts. During the peak demand periods the company resorts to working overtime, hiring of temporary workers, and employing sub-contractors.

The recruitment policy of the company is to recruit the most suitable candidate for any position. If the right candidate is not available, fresh graduates or other workers are sent to the parent company for the relevant training. While most of the latest engineering and design technology are provided by the parent company, the subsidiary in Singapore has its own design section which is capable of carrying out the simple designs. Although company 3B can provide turnkey specifications, clients usually dictate their own specifications which have to be followed by the design department. The most important factor for the company's survival is the ability to retain all its skilled workforce since it is very difficult to recruit workers with such specialized skills in Singapore.

The company adopts the same management philosophy and organizational structure as their parent company. The working attitude, productivity, and quality of work of the average Singaporean worker were described as at least equal to those of their counterparts in the parent company. Teamwork was said to be poor mainly because of language barriers of the multi-racial workforce particularly when the employees have low educational levels. Employees' promotion and remuneration are based on performance with seniority playing a minor

role. The company had retrenched some unskilled and semi-skilled workers recently due to the very poor demand caused by the economic recession. The company pays very well by Singapore standard and the labour turnover rate is relatively low at 2.5% per annum.

#### Company 3C

Company 3C is one of the oil-rig companies in Singapore. The company was incorporated in the early 1970's. During the 1970's, the South East Asian region was considered as one of the fastest growing regions in the world providing potential demands for oil-rigs. Singapore was chosen for the venture because of her political stability and cheap labour. The manufacturing process is jobbing in nature and the company works single shift. Most of the workers are Singaporeans with a small number from West Malaysia. The company does not rely on guest workers from the Indian sub-continent.

During the start-up stage, fresh graduates, experienced engineers and other skilled workers were recruited by the company. Many of the pioneers were sent for overseas training in the parent company. Training emphasis is on the upgrading of specialized skills. The company believes that each worker should be a specialist in his particular job only. The parent company provides almost all the technological know-how for the construction of oil-rigs. However, company 3C is capable of carrying out design modifications.

Company 3C adopts the the same management philosophy and



organizational structure as their parent company. The managing director of the company feels that the productivity, working attitude, and quality of work of the average Singaporean worker are at least equal to those of their counterparts in the parent company. Teamwork is slightly inferior as compared to the parent company. Singaporean workforce was also described as easy to manage and control. Employees' promotion and remuneration are based mainly on performance although seniority is also taken into account. The company has avoided retrenchment of workers by employing subcontractors and temporary workers during the peak demand periods. However, the company would resort to retrenchment of workers to avoid losses if necessary. In addition, the company believes in skilled labour hoarding, i.e. keeping skilled workers for as long as they possibly can despite the global recession in the oil-rig industry. The rationale behind this is that, if the demands picks up, it is very difficult to re-employ these skilled workers once they have left the company. Another reason is the high cost of training skilled workers. During the time of interview, there was very little activity due to economic recession and barges and repair works were contracted at cost to keep the workers occupied. The company pays well by Singapore standard and the labour turnover rate is relatively low at 2% per annum.

The company places great importance in motivating its workers. All grievances are heard and dealt with effectively. Job rotation and job enrichment are also used to break the routine and monotonous job. Training schemes whereby every new worker is assigned to a senior and more experienced worker for on-the-job training is also

carried out. The company's welfare scheme to foster a sense of identification and loyalty to the company includes yearly bonuses of up to 6 months salary depending on the profits for that year. The company also supports unionization of the workers within the company.

#### Company 3JA

Company 3JA is a Japanese subsidiary established in the mid-1970's. Singapore was chosen for the venture mainly because of its political stability, and the ease of sourcing materials. Marine fabrication and engineering services are the main activities of the company. During the start-up stage some Singaporeans were given overseas training ranging from 3 months to one year in the Japanese parent company. Japanese engineers together with the returned Singaporeans set up the company. Most of the Singaporean pioneers in the company have since left the company for better paying jobs elsewhere. The Japanese parent company provides all the necessary technological know-how to company 3JA. Most of the more sophisticated parts and components are sourced in Japan for fabrication and assembly in Singapore.

At the time of interview, the company is only capable of carrying out minor design alterations. The design department was established in mid-1980's and some Singaporeans have been trained in Japan to manage the department. Due to the economic recession recruitment was stopped in 1984 and some excess staff were retrenched. The

managing director maintains that the company retrenches workers only when the survival of company is threatened.

During the periods of peak demand, the company normally recruits workers fresh from universities, polytechnics and schools. The lower starting salary and relative ease of indoctrinating fresh workers in the Japanese work ways are the main reasons. The company avoids employing sub-contractors because of the difficulty in monitoring and controlling the quality of workmanship. According to the managing director, ensuring the quality of the company's products is the first priority. Because of this practice, many workers become redundant during the economic recession and retrenchment becomes inevitable if the company is to survive.

The company found it very difficult to adopt the same management philosophy as their parent company. Major adaptations and changes were made to suit the Singaporean workforce. The morning exercise and singing of the company song cannot be implemented. Quality of work, working attitude, productivity and especially the teamwork of the average Singaporean worker were found to be inferior to those of their Japanese counterparts. The managing director however stressed that the performance of the Singaporean workers usually improved after their training in Japan. Employees' promotion and remuneration are based on both performance and seniority. The company pays an average salary by Singapore standard. Labour turnover rate is high at 20% per annum.

The Japanese parent company started with shipbuilding and



ship repairing before diversifying into oil-rigs, construction, and petrochemicals. Company 3JA however has no such plans to diversify into such a wide range of activities. The subsidiary is headed by a Japanese managing director who has moderate degree of autonomy concerning job orders from clients with the exception of jobs which require support from the parent company.

#### Company 3JB

Company 3JB is a Japanese subsidiary incorporated in the early 1970's. The main activities consist of shipbuilding, civil/building, and engineering/fabrication works. In the beginning, a group of Singaporeans were sent to Japan for training in the parent company. This group of local employees with the assistance of Japanese engineers set up the company. Ten of the local pioneers are still with the company. All the technological know-how came from the parent company with the exception of minor design modifications. According to the managing director the extremely high labour turnover in comparison with Japan has set back the company's localization programme. Company 3JB will continue to receive full technological backing from Japan. Most of the materials for local and Middle East turnkey projects were sourced in Japan.

The company usually recruits workers fresh from universities, polytechnics, and schools. The relative ease of indoctrinating fresh workers in the Japanese work ways and willingness to accept

lower starting salary were cited as the main reasons. The company's policy is to use its own employees for any job because of the difficulty in monitoring and controlling the quality of workmanship of the sub-contractors. Local sub-contractors were found to be unreliable and very poor in delivery or completion dates. The company was forced to retrench a substantial number of workers during the current economic recession. The managing director explained that the company took the choice of retrenching the excess workers instead of closing down the company in which all workers will be rendered jobless. It was the last resort left to the company short of closing down. The company had incurred heavy losses before the decision was taken.

The company found it difficult to adopt the same management philosophy as their parent company. Major adaptations and changes were made to suit the Singaporean workforce. The morning exercise and singing of the company song which are compulsory in the parent company cannot be implemented. The coupon system for lunch in which the employee voluntarily deposits the coupons of the correct value in a box at the exit according to the value of lunch he took cannot be adopted. In the parent company there were hardly any dishonest underpayment or non-payment in the company-run canteen. However in company 3JB the high labour turnover and employment of many foreign workers renders the system impossible to operate because of the widespread practice of underpayment or non-payment after their lunch. The quality of work, working attitude and productivity of the average Singaporean worker were found to be slightly below those of the Japanese counterparts. Teamwork was found to be poor. The

company pays an average salary by Singapore standard. Labour turnover is high at 18% per annum.

#### Company 4A

Company 4A is a U.S. subsidiary incorporated in the late 1970's. The company was attracted by the tax incentives, Singapore's strategic geographic position, cheap labour, stable internal political and social climate, and the strict labour laws. Another important factor was the availability of flatted factories and labour which reduce the the start-up time to approximately three months. Pull-out time is also around three months should the company finds the operation not viable. The factory manufactures subassemblies which are shipped to the parent company for assembly into the final product. Operations are described as capital and material intensive rather than labour intensive. The main work done in the factory consists of the mass-production process for the subassembly and the testing of the subassembly. Most of the components for the assembly were imported from the Far East and other local companies.

The factory was set-up by the American engineers from the parent company assisted by locally trained engineers. The bulk of the labour force consists of female production operators. The company prefers to recruit experienced employees rather than spending time and money training the inexperienced recruits. The company is capable of modifying and developing production process for standard products. Technology for new products is provided by the parent



company.

Company 4A adopts the same management philosophy and organizational structure as its parent company. The company management is result-oriented. Employees' promotion and remuneration are based mainly on performance although seniority is also considered. The average Singaporean worker is judged to be at least equal to their American counterparts in terms of productivity, working attitude and quality of work. Singaporean workers' teamwork is considered to be slightly inferior mainly because of language problems of the multi-racial workforce. Although the company is relatively new it had already retrenched excess workers on two occasions. The company cited the highly unpredictable seasonal demands for its products and the reluctance of production workers to work overtime during peak demand as the main reasons. The company pays well by Singapore standard and the labour turnover rate is approximately 12 per cent per annum.

The company conducts a monthly questionnaire survey to obtain feedback on welfare aspects, remuneration, workers' satisfaction, complaints, and recreational facilities. The workers are allowed to remain anonymous in the survey. The results of the surveys indicated that most workers dislike the monotonous work and many asked for higher remuneration.

#### Company 4B

Company 4B is a U.S. subsidiary incorporated in the early 1970's.

According to the managing director, during the early 1970's, multinational corporations were attracted by the packages of tax incentives to invest in Singapore. The tax incentives, Singapore's strategic geographic position, cheap labour, stable internal political and social climate, and strict control of labour movement make Singapore the most suitable location for their factory. The company was expanded in mid 1970's and early 1980's to its present size with a total workforce of 1848.

The production process is high volume and mass-production in nature. The expansion consisted of increase in production volume, diversification of products and manufacturing of more sophisticated components which were previously imported from the United States. At present the company is working a single shift.

The company was set up by American engineers from the parent company. Most Singaporean engineers were trained locally by the American engineers although the better ones were given overseas training in the parent company. The company prefers to recruit experienced employees rather than spending time and money training the inexperienced recruits. The bulk of the workforce consists of female production operators. The company is capable of process development and modification for the production of standard and related products. It is not capable of carrying out basic research although new product development is being carried out to a small extent. Basic research and development is carried out by the parent company which provides full technological support to company 4B.

Company 4B adopts the same management philosophy and organizational structure as their parent company. The company management is result-oriented. All employees are motivated and managed by objectives. Employees' promotion and remuneration are based mainly on performance and to some extent seniority. Increases in remuneration are based mainly on performance judged by a merit point system. According to the managing director who had worked many years in the United States, the productivity, working attitude and quality of work of the average Singaporean worker is slightly better than those of their counterparts in the parent company whereas Singaporean workers' teamwork is slightly inferior. Singaporean workforce was described as easy to manage and control. The company had retrenched workers twice; once during the oil crisis and second during the current economic recession to maintain profitability of the company. It was explained that companies in the electronics sector faces unpredictable seasonal peak and off-peak demands. During the severe and prolonged periods of low demand the company has to retrench excess workers to maintain its competitiveness and to prevent losses. The strict labour law and the positive labour union attitudes are very conducive to the company's operations. It is normal for the company to implement short-day week with salary cut of up to 20% during periods of low demand. Retrenchment is used as a last resort to maintain the company's profitability. The retrenched workers are always offered the first priority to re-join the company when demand picks up. The company pays very well by Singapore standards and the labour turnover rate is relatively low at 3 per cent per annum.



#### Company 4JA

Company 4JA is a Japanese subsidiary established in the early 1970's. Singapore was chosen for the venture mainly because of its political stability and tax incentives. The education and manpower policies as well as location as a regional centre were the other factors. In the beginning, a number of fresh degree and diploma holders were recruited and sent for overseas training in Japan. On their return together with a group of Japanese engineers, the factory was set up.

The company prefers to recruit inexperienced workers and provide them with training rather than recruiting experienced workers. About half of the pioneers who were trained in Japan left the company to join American companies because of faster promotion and higher salary. The company stressed that American companies' preferences of recruiting experienced locals with at least five years experience have "spoilt" ambitious Singaporeans who are impatient to stay with Japanese companies where the employees are being trained and developed for a number of years before promotion. Company 4JA is fortunate as about half of the pioneers stayed with the company and they in turn train up more workers. The parent company provides full technological support to company 4JA. The company was expanded in 1984 and is presently capable of designing and modifying the production process for standard products. The company is presently upgrading its engineering staff to carry out product development and a number of graduates have been sent to the parent company for training. The managing director is satisfied

with the productivity of the Singaporean workers but feels that the Singaporean workers' working attitude, teamwork and quality of work are below those of the Japanese counterparts.

The company found it difficult to adopt the same management philosophy as their parent company. Major adaptations and changes were made to suit the Singaporean workforce. The morning exercise and singing of company song which are compulsory in the parent company cannot be implemented in company 4JA. Singaporean workers also display reluctance to put on the company's uniform and badge.

The company pays an average salary by Singapore standards. Employees' remuneration and promotion are based on both performance and seniority. Promotions were accelerated to keep the better workers. Labour turnover rate is about 16 per cent per annum. The high turnover rate poses problems as the company requires highly skilled workers. The company follows the parent company's policy of employing the lifetime employment system and has not retrenched any worker since it started operation in Singapore. However, the labour turnover rate remains high even during the economic recession as most Singaporeans prefer faster promotion and higher salary to job security.

#### Company 4JB

Company 4JB is a Japanese subsidiary incorporated in the mid-1970's as part of the parent company's diversification on a worldwide basis. Singapore was chosen for the venture mainly because of its

political stability, tax incentives and cheap labour. When the company first started, the production process was generally manual. The factory was set up by Japanese engineers from the parent company. At the same time, a group of local workers were recruited and sent to Japan for training. The number of Japanese engineers were reduced as returned workers gradually took over their functions. The company was expanded in the early 1980's and the production lines were automated for high volume mass-production. The company is presently capable of carrying out product design modifications and designing production process to manufacture the products. The parent company provides full technological support to company 4JB. The company works single shift.

The company prefers to recruit workers fresh from universities, colleges or schools and provide them with training rather than recruiting experienced workers. Most of the Singaporeans who were sent to Japan for training had since left the company for better jobs in American companies. Production workers take about one month to train and there is no formal training for supervisors and managerial staff. Training is on-the-job and by ad hoc courses run by Japanese staff whenever there is time or during periods of low demand. The bulk of the workforce consists of female production workers. The average Singaporean production worker is generally hardworking although his productivity, working attitude, quality of work and teamwork are inferior to the average Japanese worker. However, at the supervisory and managerial levels, Singaporeans are just as productive as the Japanese counterparts.



The company found it very difficult to adopt the same management philosophy as its parent company. Major adaptations and changes were made to suit the Singaporean workforce. The morning exercise and singing of the company song were abolished after some futile attempts to implement them. For production operators the company pays an average salary by Singapore standards. However, the company pays a relatively high salary by Singapore standards for employees at the supervisory and managerial levels. Employees' remuneration and promotion are based on both performance and seniority. Promotions were accelerated to keep the better workers. Labour turnover rate is about 18 per cent per annum. Most employees left after gaining enough experience to join American companies. The company follows the parent company's policy of lifetime employment system and has not retrenched any worker since it started operation in Singapore. In fact during the periods of extremely poor demand the company worked 4-day week and gave training classes to fill up the remaining time. On some occasions the company sponsored holidays and picnics to fill up the remaining time. In spite of these attempts to gain loyalty from the Singaporean workers the labour turnover rate remains high even during the economic recession. Most Singaporean workers prefer faster promotion and higher salary to job security.

#### Company 4JC

Company 4JC is a Japanese subsidiary incorporated in the mid-1970's and is the first overseas subsidiary of the Japanese parent company. Political stability, tax incentives and cheap labour were the main reasons for choosing Singapore as the location for the Japanese

subsidiary. When the firm first started, it produced simple components for assembly in the parent company and for export to other countries. The main operations involve the manufacturing of various parts from raw materials and assembling these parts in subassembly. Almost all the parts are made in the Singapore plant and some specialized parts are purchased from local Japanese suppliers. The company was expanded in the early 1980's and more sophisticated parts were made. The company is presently capable of modifying the production process for standard products.

To start-up the factory, the parent company sent engineers and machinery and set up the production system in terms of the production lines and material handling system. The basic technological know-how is provided by the parent company. At present the parent company sends engineers to company 4JC only when a new sophisticated product is being introduced or whenever there are production or quality problems which require technical assistance. However, the company can manage on its own most of the time. The company works a single shift.

The company normally recruits workers fresh from universities, polytechnics and school. On-the-job training and ad hoc formal training are provided by the company. Most division heads, engineers and supervisors have been sent to Japan for training. The bulk of the workforce consists of female production operators. It takes approximately three months on-the-job training to train each production operator. The managing director expressed satisfaction with the average Singaporean workers' productivity, working

attitude, and quality of work although it is still below those of the Japanese counterparts. However, Singaporeans' teamwork is poor by Japanese standard.

The company found it difficult to adopt the same management philosophy as its parent company. Major adaptations and changes were made to suit the Singaporean workforce. There is no morning exercise or singing of company song and promotions are accelerated to keep the better workers. The company pays an average salary by Singapore standards. Employees' remuneration and promotion are based on both performance and seniority. Labour turnover rate is about 22 per cent per annum. About 30 per cent of the workforce have less than one year service; another 35 per cent with between one to less than three years and only 35 per cent with three years and above.

The company follows the parent company's policy of lifetime employment system and has not retrenched any worker since starting its operations in Singapore. During periods of peak demand the company prefers to work long hours of overtime instead of employing new workers. The problem of getting worker to work overtime was solved by interchanging and combining operators who are willing to work overtime from two or more production lines to form at least one full production line. During periods of low demand the workers are given training in quality assurance and encouraged to form quality control circles to fill up their time. The labour turnover rate remains high even during the recession. The managing director expressed disappointment that the average Singaporean worker prefers faster promotion and higher salary to job security and also



complained about the difficulty of instilling company loyalty into the Singaporean workforce.

#### Summary on firm by firm analysis

The analysis shows that the eight U.S. subsidiaries were all incorporated in the 1970's. These subsidiaries adopted the same management system as their parent companies. Employees' promotion and remuneration were based mainly on performance rather than seniority. Singapore workforce were described as easy to manage and control. Further, working attitude, productivity, quality of work, and teamwork were generally described as good. However, some subsidiaries (companies 3A, 3B, 4A) considered teamwork of the Singaporean workforce to be slightly inferior because of language barriers posed by the multi-racial workforce.

In contrast, the analysis shows that the eight Japanese subsidiaries (also incorporated in the 1970's) found difficulty in adopting the same management system as their parent companies. The difficulties encountered by these subsidiaries were generally similar. Major adaptations and changes were made to suit the Singaporean workforce. The singing of company's song and morning exercise were difficult to implement. Employees' remuneration were based on performance and seniority rather than placing emphasis on seniority. Productivity, working attitude, quality of work, and teamwork of the average Singaporean worker were assessed as inferior to the average Japanese worker. Lifetime employment did not appear to have any positive effect on high labour turnover which averaged 19% per annum.

It is apparent from this analysis that U.S. management system do not face any major problem in Singapore. However, Japanese management system generally encounters difficulties in their implementation and major adaptations/changes need to be made to suit the Singaporean workforce. These adaptations/changes do not appear to be totally successful and Singaporean workers were perceived to be inferior to the Japanese workers. This implies that U.S. management system may result in higher firm productivity when compared to Japanese management system. A sector by sector analysis need to be carried so that labour and capital productivity, breakdown of employees of comparable U.S.- Japanese subsidiaries in the same industrial sector can be analysed.

#### 8.3.4 Sector by sector analysis

The productivity data and other relevant information obtained during the interviews of the 10 U.S. subsidiaries and 11 Japanese subsidiaries were examined sector by sector to establish whether there are any significant variations in the performance of U.S. and Japanese subsidiaries within each of the four industrial sectors.

##### Industrial sector 1

All companies interviewed in this industrial sector belong to the petrochemical and chemical group. All these companies work three rotating shifts.

Analysis of data

Company	Labour Productivity	Capital Productivity	Number of employees	Labour Turnover p.a.
1A	\$230500	20%	503	4%
1B	\$185064	22%	127	6%
Average	\$207782	21%		
1JA	\$168000	10%	566	12%
1JB	\$ 55985	15%	83	10%
1JC	\$100108	11%	112	13%
Average	\$108031	12%		

The data suggest that U.S. subsidiaries are significantly more productive in terms of labour and capital productivity. Comparing U.S. subsidiaries 1A and 1B to Japanese subsidiaries 1JA and 1JB which are of comparable size in terms of number of employees, the data suggest that U.S. subsidiaries are approximately 30% more productive in labour productivity and 100% more productive in capital productivity. Further, the annual labour turnover rate of U.S. subsidiaries is about half that of the Japanese subsidiaries.



Type of employees

Company	Non-Managerial	Managerial	Singaporean	Non-Singaporean
1A	432 (86%)	71 (14%)	473 (94%)	30 (6%)
1B	108 (85%)	19 (15%)	121 (95%)	6 (5%)
Total	540 (86%)	90 (14%)	594 (94%)	36 (6%)
1JA	537 (95%)	29 (5%)	389 (69%)	177 (31%)
1JB	73 (88%)	10 (12%)	73 (88%)	10 (12%)
1JC	103 (92%)	9 (8%)	86 (77%)	26 (23%)
Total	713 (94%)	48 (6%)	548 (72%)	213 (28%)

The data on the breakdown of employment suggest that the percentage of managerial staff employed by U.S. subsidiaries is more than twice those of Japanese subsidiaries. Japanese subsidiaries also employ more substantially foreign workers. This could be due to the difficulty in finding Singaporean workers to work in the 2nd and 3rd shift. The lower employees' remuneration paid by Japanese subsidiaries resulted in having to employ cheaper foreign workers mostly from Malaysia and Indonesia. However this is only a temporary solution as foreign workers are issued with work permits which have to be renewed every year. The Japanese subsidiaries in this sector are relatively new as compared to the U.S. subsidiaries and this could be one of the reasons in having a significantly lower labour productivity and capital productivity.

Since U.S. and Japanese subsidiaries operate under the same environmental condition in Singapore, the higher labour and capital productivity of U.S. subsidiaries suggest that U.S. management philosophy and management practices is more effective in Singapore.

Industrial sector 2

All companies interviewed in this industrial sector belong to the precision engineering, industrial machinery, and machine tools group. All these companies work two shifts. Data are as follows :-

Company	Labour Productivity	Capital Productivity	Number of employees	Labour Turnover p.a.
2A	\$32454	21%	87	6%
2B	\$40317	42%	568	17%
2C	\$29034	45%	1551	10%
Average	\$33935	36%		
2JA	\$24719	28%	196	20%
2JB	\$34715	23%	286	30%
2JC	\$29915	54%	1558	25%
Average	\$29783	35%		

The data suggest that U.S. subsidiaries have slightly higher average labour productivity and capital productivity than Japanese subsidiaries. Comparing U.S. subsidiary 2C to Japanese subsidiary 2JC which are of comparable size in terms of number of employees,

the data suggested that labour productivity is approximately the same. However, the high degree of automation which includes fully automated production lines in Japanese subsidiary 2JC makes its capital productivity significantly higher than U.S. subsidiary 2C. Labour productivity of U.S. subsidiaries 2A and 2B are slightly higher than Japanese subsidiaries 2JA and 2JB. Annual labour turnover rate of U.S. subsidiaries is also very much lower than those of Japanese subsidiaries. The difficulty in adapting Japanese management to the local environmental conditions, lower remuneration and slower promotion are probably the reasons for the higher labour turnover rate.

Type of employees

Company	Non-Managerial	Managerial	Singaporean	Non-Singaporean
2A	79 (91%)	8 (9%)	84 (97%)	3 (3%)
2B	516 (91%)	52 (9%)	558 (98%)	10 (2%)
2C	1470 (95%)	81 (5%)	1175 (76%)	376 (24%)
Total	2065 (94%)	141 (6%)	1817 (82%)	389 (18%)
2JA	176 (90%)	20 (10%)	186 (95%)	10 (5%)
2JB	275 (96%)	11 (4%)	208 (73%)	78 (27%)
2JC	1479 (95%)	79 (5%)	1138 (73%)	420 (27%)
Total	1930 (95%)	110 (5%)	1532 (75%)	508 (25%)

The data on the breakdown of employment suggest that the percentage



of managerial staff employed by U.S. subsidiaries is approximately equal to those of Japanese subsidiaries. Japanese subsidiaries also employ higher percentage of cheap foreign workers mainly from Malaysia and Indonesia mainly because of the lower remuneration paid by these subsidiaries. This could be due to the difficulty in finding Singaporean workers to work in the 2nd shift.

### Industrial sector 3

All companies interviewed in this industrial sector belong to the shipbuilding, ship repairing and engineering services group. All these companies work single shift.

### Analysis of data

Company	Labour Productivity	Capital Productivity	Number of employees	Labour Turnover p.a.
3A	\$38937	17%	207	3%
3B	\$34330	15%	652	2.5%
3C	\$35834	13%	101	2%
Average	\$36367	15%		
3JA	\$25664	14%	290	20%
3JB	\$26902	12%	450	18%
Average	\$26283	13%		

The data suggest that U.S. subsidiaries have significantly higher

average labour productivity and and slightly higher average capital productivity than Japanese subsidiaries. All U.S. subsidiaries in this sector have significantly higher labour productivity than Japanese subsidiaries. U.S. subsidiaries in this sector rarely need to retrench employees as they rely on subcontractors to cope with the high workload during peak demand. Japanese subsidiaries, however, usually prefer to use their own employees for every job to maintain the quality of their products and this preference resulted in the need to retrench workers during severe economic recession when the subsidiaries' survival is threatened. The annual labour turnover rate of U.S. subsidiaries is also very much lower than those of Japanese subsidiaries. The difficulty in adapting Japanese management to the local environmental conditions, lower remuneration and slower promotion are probably the major reasons causing the higher labour turnover rate.

Type of employees

Company	Non-Managerial	Managerial	Singaporean	Non-Singaporean
3A	192 (93%)	15 (7%)	182 (88%)	25 (12%)
3B	552 (85%)	100 (15%)	604 (93%)	48 (7%)
3C	91 (90%)	10 (10%)	100 (99%)	1 (1%)
Total	835 (87%)	125 (13%)	886 (92%)	74 (8%)
3JA	245 (84%)	45 (16%)	255 (88%)	35 (12%)
3JB	366 (81%)	84 (19%)	369 (82%)	81 (18%)
Total	611 (83%)	129 (17%)	624 (84%)	116 (16%)

The data on the breakdown of employment suggest that the percentage of managerial staff employed by U.S. subsidiaries is significantly lower than those of Japanese subsidiaries. The quest for higher quality products by Japanese subsidiaries in this sector where the work is jobbing in nature rather than mass or batch production resulted in the higher percentage of managerial staff.

Japanese subsidiaries also employ higher percentage of foreign workers. This could be due to the difficulty in finding Singaporean workers to carry out the hard work in the shipbuilding and construction sectors and also the result of lower employees' remuneration paid by Japanese subsidiaries.

#### Industrial sector 4

All companies interviewed in this industrial sector belong to the electrical and electronics group. All these companies work single shift.

#### Analysis of data

Company	Labour Productivity	Capital Productivity	Number of employees	Labour Turnover p.a.
4A	\$30186	29%	350	12%
4B	\$29680	23%	1848	3%
Average	\$29933	26%		
4JA	\$28579	17%	486	16%
4JB	\$23812	21%	1516	20%
4JC	\$32755	16%	226	22%
Average	\$28382	18%		



The data suggest that U.S. subsidiaries have approximately equal labour productivity and slightly higher capital productivity than Japanese subsidiaries. All companies in this group manufacture their products using mass-production lines and female production operators form the bulk of the workers. Japanese parent companies in this sector are renowned for their quality and mass-production productivity. Thus data suggest that Japanese subsidiaries may have difficulty in adapting to the local environmental conditions which resulted in the slightly lower labour and capital productivity as compared to U.S. subsidiaries.

The low labour turnover of 3% annum given by company 4B suggests that the higher employees' remuneration provided by company 4B is a major factor in reducing labour turnover. Retrenchment of employees and lifetime employment do not appear to be a major factor affecting labour turnover in Singapore as a retrenched production operator is normally able to obtain a similar job within a month. In fact many retrenched workers benefited from the retrenchment compensation and at the same time obtained a similar job. The average annual labour turnover rate of U.S. subsidiaries is also very much lower than those of Japanese subsidiaries. The difficulty in adapting Japanese management to the local environmental conditions, lower remuneration and slower promotion are probably the reasons for the higher labour turnover rate.

Type of employees

Company	Non- Managerial	Managerial	Singaporean	Non- Singaporean
4A	302 (86%)	48 (14%)	342 (98%)	8 (2%)
4B	1612 (87%)	236 (13%)	1709 (92%)	139 (8%)
Total	1914 (87%)	284 (13%)	2051 (93%)	147 (7%)
4JA	460 (95%)	26 (5%)	440 (91%)	46 (9%)
4JB	1450 (96%)	66 (4%)	1427 (94%)	89 (6%)
4JC	212 (94%)	14 (6%)	214 (95%)	12 (5%)
Total	2122 (95%)	106 (5%)	2081 (93%)	147 (7%)

The data on the breakdown of employment suggest that the percentage of managerial staff employed by U.S. subsidiaries is significantly higher than those of Japanese subsidiaries. The substantially higher managerial to non-managerial staff ratio of U.S. subsidiaries also suggests that U.S. subsidiaries tend to employ more managerial staff and have more elaborate organizational structure. The U.S. subsidiaries 4A and 4B in fact have more specialists and more elaborate organizational structure. Both companies have production engineering, process engineering, quality control, quality assurance, maintenance, design, and training departments to carry out the manufacturing activities. In contrast, the Japanese subsidiaries 4JA, 4JB, and 4JC have only production engineering,

quality control, and industrial engineering departments to carry out the manufacturing activities. However, both U.S. and Japanese subsidiaries employ approximately equal percentage of foreign workers.

#### Sectoral analysis of data from the four industrial sectors

The productivity data and other relevant information on the four industrial sectors obtained during the interviews of 10 U.S. subsidiaries and 11 Japanese subsidiaries were combined and examined to establish whether there are any significant variations in the performance of U.S. and Japanese subsidiaries among the four industrial sectors. In addition, the characteristics of each industrial sector such as type of production process and pace of technological change were also being identified. The summarized data are given in the following tables :-



Summary of data from 10 U.S. subsidiaries

Company	Labour Productivity	Capital Productivity	Number of employees	Labour Turnover p.a.
1A	\$230500	20%	503	4%
1B	\$185064	22%	127	6%
Average	\$207782	21%		5%
2A	\$32454	21%	87	6%
2B	\$40317	42%	568	1%
2C	\$29034	45%	1551	10%
Average	\$33935	36%		5.7%
3A	\$38937	17%	207	3%
3B	\$34330	15%	652	2.5%
3C	\$35834	13%	101	2%
Average	\$36367	15%		2.5%
4A	\$30186	29%	350	12%
4B	\$29680	23%	1848	3%
Average	\$29933	26%		7.5%
Grand Average	\$77004	24.5%		5%

Number of work shifts

Single shift : Companies 3A, 3B, 3C, 4A and 4B.

Two shifts : Companies 2A, 2B and 2C.

Three shifts : Companies 1A and 1B.

Summary of data from 10 U.S. subsidiaries

Type of employees

Company	Non-Managerial	Managerial	Singaporean	Non-Singaporean
1A	432 (86%)	71 (14%)	473 (94%)	30 (6%)
1B	108 (85%)	19 (15%)	121 (95%)	6 (5%)
Total	540 (86%)	90 (14%)	594 (94%)	36 (6%)
2A	79 (91%)	8 (9%)	84 (97%)	3 (3%)
2B	516 (91%)	52 (9%)	558 (98%)	10 (2%)
2C	1470 (95%)	81 (5%)	1175 (76%)	376 (24%)
Total	2065 (94%)	141 (6%)	1817 (82%)	389 (18%)
3A	192 (93%)	15 (7%)	182 (88%)	25 (12%)
3B	552 (85%)	100 (15%)	604 (93%)	48 (7%)
3C	91 (90%)	10 (10%)	100 (99%)	1 (1%)
Total	835 (87%)	125 (13%)	886 (92%)	74 (8%)
4A	302 (86%)	48 (14%)	342 (98%)	8 (2%)
4B	1612 (87%)	236 (13%)	1709 (92%)	139 (8%)
Total	1914 (87%)	284 (13%)	2051 (93%)	147 (7%)
Grand Total	5354 (89%)	640 (11%)	5348 (89%)	646 (11%)

Summary of data from 11 Japanese subsidiaries

Company	Labour Productivity	Capital Productivity	Number of employees	Labour Turnover p.a.
1JA	\$168000	10%	566	12%
1JB	\$ 55985	15%	83	10%
1JC	\$100108	11%	112	13%
Average	\$108031	12%		11.7%
2JA	\$24719	28%	196	20%
2JB	\$34715	23%	286	30%
2JC	\$29915	54%	1558	25%
Average	\$29783	35%		25%
3JA	\$25664	14%	290	20%
3JB	\$26902	12%	450	18%
Average	\$26283	13%		19%
4JA	\$28579	17%	486	16%
4JB	\$23812	21%	1516	20%
4JC	\$32755	16%	226	22%
Average	\$28382	18%		19.3%
Grand Average	\$48120	20%		19%

Number of work shifts

Single shift : Companies 3A, 3B, 4A, 4B and 4C.

Two shifts : Companies 2A, 2B and 2C.

Three shifts : Companies 1A, 1B and 1C.



Summary of data from 11 Japanese subsidiaries

Type of employees

Company	Non- Managerial	Managerial	Singaporean	Non- Singaporean
1JA	537 (95%)	29 (5%)	389 (69%)	177 (31%)
1JB	73 (88%)	10 (12%)	73 (88%)	10 (12%)
1JC	103 (92%)	9 (8%)	86 (77%)	26 (23%)
Total	713 (94%)	48 (6%)	548 (72%)	213 (28%)
2JA	176 (90%)	20 (10%)	186 (95%)	10 (5%)
2JB	275 (96%)	11 (4%)	208 (73%)	78 (27%)
2JC	1479 (95%)	79 (5%)	1138 (73%)	420 (27%)
Total	1930 (95%)	110 (5%)	1532 (75%)	508 (25%)
3JA	245 (84%)	45 (16%)	255 (88%)	35 (12%)
3JB	366 (81%)	84 (19%)	369 (82%)	81 (18%)
Total	611 (83%)	129 (17%)	624 (84%)	116 (16%)
4JA	460 (95%)	26 (5%)	440 (91%)	46 (9%)
4JB	1450 (96%)	66 (4%)	1427 (94%)	89 (6%)
4JC	212 (94%)	14 (6%)	214 (95%)	12 (5%)
Total	2122 (95%)	106 (5%)	2081 (93%)	147 (7%)
Grand Total	5376 (93%)	393 (7%)	4785 (83%)	984 (17%)

The data suggest that industrial sector one (petrochemical and chemicals industry) has the highest labour productivity among the four industrial sectors for both U.S. and Japanese subsidiaries. U.S. subsidiaries are more established in this sector and have significantly higher labour and capital productivity than Japanese subsidiaries. This sector is characterized by very heavy capital investments and continuous production process utilizing highly skilled employees resulting in high labour productivity.

Industrial sector two (precision engineering, industrial machinery and machine tools) has the highest capital productivity among the four industrial sectors. This sector is characterized by moderate pace of technological change with most technological changes resulting from applications of technology to new products rather than development of new technology. Existing production processes could be modified to manufacture new products and this probably resulted in high capital productivity in this sector. Within this sector, U.S. subsidiaries have higher labour productivity than Japanese subsidiaries although the capital productivity is approximately equal.

In industrial sector three (shipbuilding, ship-repairing, and engineering services) U.S. subsidiaries have significantly higher labour productivity than Japanese subsidiaries although the capital productivity is approximately equal. This sector is characterized by slow technological changes resulting from design modifications and improvements to existing products. Manufacturing process is jobbing or one-off type in nature. Considering the characteristics

of manufacturing process in this sector, the significantly lower annual labour turnover rate probably resulted in a lower managerial to non-managerial staff ratio in U.S. subsidiaries as compared to Japanese subsidiaries. The low annual labour turnover is also a major reason for the higher labour productivity obtained by U.S. subsidiaries.

Capital productivity of U.S. subsidiaries in industrial sector four (electrical and electronics) is higher than Japanese subsidiaries although labour productivity is approximately equal. This sector is characterized by rapid technological change. Any company that does not keep up with the rapid technological change will soon find its products obsolete. Female production operators form the bulk of the workforce in this industrial sector. Japanese subsidiaries have a significantly lower managerial to non-managerial staff ratio of 5% and a higher annual labour turnover rate of 19.3% per annum as compared to U.S. subsidiaries ratio of 13% and annual labour turnover rate of 7%.

In summary, the combined data of the four industrial sectors suggest that U.S. subsidiaries have significantly higher labour and capital productivity. The average annual labour turnover rate of 5% per annum is significantly lower than Japanese subsidiaries' labour turnover rate of 19% per annum.

The breakdown of employment also indicated that Japanese subsidiaries tend to employ more foreign workers. Lower



renumeration and higher labour turnover rate of Japanese subsidiaries are probably the reasons for having to be more dependent on foreign workers as compared to U.S. subsidiaries. The managerial to non-managerial staff ratio of U.S. subsidiaries is also higher than Japanese subsidiaries' suggesting that U.S. subsidiaries tend to have more elaborate management structures and employ more specialists/professionals.

The average labour productivity figures for the two groups of firms in the four industrial sectors given in Singapore dollars for 1984 calculated from the data obtained during the interviews are summarized below :-

Two groups of firms	Four industrial sectors			
	1	2	3	4
1. U.S. subsidiaries in Singapore	\$207782	\$33935	\$36367	\$29933
2. Japanese subsidiaries in Singapore	\$108031	\$29783	\$26283	\$28382

The average capital productivity figures for the two groups of firms in the four industrial sectors given in percent are :-

Two groups of firms	Four industrial sectors			
	1	2	3	4
1. U.S. subsidiaries in Singapore	21%	36%	15%	26%
2. Japanese subsidiaries in Singapore	12%	35%	13%	18%

The results suggested that U.S. subsidiaries were more productive in all the sectors studied. However, it should be noted that the results were obtained from a relatively small sample and there were relatively wide variations in the individual values. Since U.S. subsidiaries and Japanese subsidiaries operate under the same environmental conditions in Singapore, the data suggest that U.S. management system is more effective in Singapore as compared to Japanese management system.

#### 8.3.5 Findings based on interviews of 40 firms

The summary of findings based on the final interviews involving 40 firms (including the 10 U.S. subsidiaries and 11 Japanese subsidiaries which provided data on productivity) from the two groups of subsidiaries in the four industrial sectors are as follows :-

## Decision-Making

### U.S. subsidiaries

Most U.S. subsidiaries did not strive for consensus in the decision-making process. Decisions were usually made by the respective divisional heads or departmental managers. The main reasons were "it is too slow", "useless", "it won't work", and "no accountability". A few U.S. subsidiaries mentioned that it was not unusual to dismiss departmental head or manager if wrong decisions were made. Examples of finance manager, maintenance superintendent and production manager being dismissed for making the wrong decisions were given by some U.S. subsidiaries. One company representative mentioned that making a wrong major decisions was enough to warrant an immediate dismissal. At the subsidiary-parent company level, U.S. subsidiaries worked virtually on his own so that consensus between the subsidiary and corporate headquarters regarding the subsidiary operations was unnecessary. Usually the Chief Executive was held accountable for the company performance. Two examples of Chief Executive being dismissed were mentioned. Information from the interviews also suggested that although U.S. subsidiaries worked virtually on its own, major decisions on investment, retrenchment, expansion and subsidiaries' policies were usually dictated by the parent company.

Most decisions within the subsidiary were made by the chief executive with little or no consensus. Decision-making functions were centred on the management with little or no participation



from the lower management or workers. Singaporeans appeared to be "at home" with the U.S. methods.

#### Japanese subsidiaries

The information obtained during the interviews were in agreement with those obtained during the pilot study. All Japanese subsidiaries interviewed employed the "ringi" decision-making system. There were no significant differences among the four industry groups. Decisions were analyzed and discussed at all levels of the management hierarchy with the bulk of the decisions made by mid-level management. Decisions were usually based only on unanimous agreement by group members. Harmony within the organization and trouble-free working relationships were preferred to even if efficiency would suffer. However, interviews with the non-Japanese managerial staff suggested major decisions such as selecting which machine to purchase, deployment of workers, etc., were usually made by the Japanese expatriates. All Japanese subsidiaries indicated that they do not like to employ individualistic people even if they are very capable. In fact, examples that suggested a high degree of decision-making by consensus were actually noted during the interviews of Japanese subsidiaries. At least two persons were always present during most of the interviews with the Japanese subsidiaries and they always seem to consult each other before replying to any questions. In contrast, usually the Chief Executive was the only one present during the interviews with U.S. subsidiaries.

Consensus was usually attained via the use of a committee system or "stamp" system where the members agree by leaving their "stamp" on the draft. The noted advantages were higher morale, "avoids unfair or radical decision" and "promote teamwork". The disadvantages mentioned were "no clear-cut responsibility" and "takes a long time to decide". Although the general observation was that Singaporeans adjusted to the Japanese "ringi" decision-making system easily a number of Japanese subsidiaries noted that most of the more capable employees preferred to be given the authority to make decisions rather than by consensus. Most Japanese subsidiaries also indicated that they have to make adaptations in the decision-making process.

#### Analysis

The U.S. method of decision-making appears to be more suitable to subsidiaries operating in Singapore. Follow-up interviews with workers from both subsidiaries confirmed the above finding. This can be explained by the fact that Singapore is a migrant society. The values and traditions of the ethnic Chinese, which comprise more than three-quarters of the population, are Confucian with its emphasis on collective rather than individualistic modes of expression and the importance of authority (S C Tham, 1981). These collectivist values centred around the extended family, clan and dialect group. However, under the impact of 25 years of dramatic social and economic changes, based on the internationalization of the domestic economy and the rise of English as predominant common language, such collectivist values have largely dissolved. The present complaint is that the Singapore worker is self-centred and

too individualistic, especially compared to his Asian counterparts. The Japanese 'ringi' decision-making system may face difficulty in Singapore even if the ethnic Chinese had retained ancestral Confucian values. Morishima (1982:195) states :

However, in Japan, which imported both Confucianism and Taoism from China, not only Confucianism but Taoism as well was modified to become a religion of the pro-government type.... all the elements which were imported into Japan from elsewhere were modified so that they could be of use in Japan's own protection and development.

Morishima (1982:198) added that the Chinese Confucianism was less collectivist than its Japanese counterpart. In fact, one of the central political tasks of the Singapore Government is to re-establish a new collectivist Singapore consciousness around a national identity.

#### Employment & remuneration as at 1984

The average starting salaries of senior and middle management staff in U.S. subsidiaries are approximately S\$3800.00 and S\$2500.00 per month respectively as compared to salaries of S\$3300.00 and S\$2200.00 per month paid by Japanese subsidiaries. This suggests that the starting monthly salaries of senior and middle management staff in U.S. subsidiaries are higher than those of Japanese subsidiaries. However, the starting salaries of production workers in both U.S. and Japanese subsidiaries are approximately equal at S\$450.00 per month. In addition, most employees of U.S.



subsidiaries received significantly higher salaries after two years' service due to the faster promotion and higher increase in salary. An average employee working for a U.S. subsidiaries would normally receives an increase of approximately 20% in salary after two years' service as compared to 14% increase for an average worker in Japanese subsidiaries. Employees in U.S. subsidiaries are evaluated twice a year for salary adjustments and promotions. Japanese companies normally evaluate their employees annually. Higher annual bonuses averaging 2 months' salary are paid by U.S. subsidiaries as compared to 1½ months' salary annual bonuses paid by Japanese subsidiaries.

All the managers interviewed agreed that wages in Singapore are lower than those of U.S. and Japanese parent companies taking into account of productivity differences. All companies interviewed used the salary structure and fringe benefits offered to government employees as a guide for determining the salary and fringe benefits to be given to their employees. Because of the high-wage policy implemented by the government during the 1980s, both U.S. and Japanese subsidiaries complained that wages in Singapore, particularly those of electrical and electronics engineers were too high and were not matched by productivity growth.

U.S. subsidiaries tend to have a significantly higher managerial to non-managerial staff ratio as compared to Japanese subsidiaries in industrial sector one (petrochemicals and chemicals) and industrial sector four (electrical and electronics). In industrial sector two (precision engineering and machine tools) both U.S. and

Japanese subsidiaries have approximately equal ratio. However, in industrial sector three (shipbuilding, automotive, and engineering services) where the manufacturing process is jobbing or one-off type the Japanese subsidiaries tend to have higher managerial staff to non-managerial staff ratio for the purpose of having better quality control.

Japanese subsidiaries prefer to recruit workers fresh from universities, polytechnics and schools. The new workers are given on-the-job training and indoctrinated in the Japanese work ways. In contrast, U.S. subsidiaries prefer to recruit experienced workers in order to save time and money training inexperienced workers.

#### Reasons for setting up the subsidiary in Singapore

Almost all U.S. and Japanese subsidiaries in Singapore identified the following three main factors in the order of importance that motivated them to invest in Singapore :

1. Relatively risk-free (in terms of political stability and strict labour laws)
2. Investment incentives (tax holidays, etc)
3. Low wage cost

Most companies cited political stability and strict labour laws as the guarantee for risk-free investment since the existing policies

conducive to foreign investments will be maintained and Singapore is virtually strike-free because of the strict labour laws and positive attitudes of labour unions. In a recent report, Lee (1986:2) also suggested that these three factors attracted Japanese and other foreign investments into Singapore.

#### Management Development, Training of Workers and Overseas Assignments

##### U.S. subsidiaries

Most managers interviewed indicated that overseas assignments were on a voluntary basis. Some managers however, expressed that selection criteria were being exercised. Criteria such as no minor children at the time of assignment, managerial talent, specialized expertise, language were being cited. The majority of the firms did not provide special training. Overseas assignment was perceived to be good for one's career with the company.

Most companies implemented some systematic management development programmes to groom local talents for managerial positions. However, preference is given to experienced workers during recruitment to save time and money in training inexperienced workers.

##### Japanese subsidiaries

Japanese managers for Singapore subsidiaries were selected.



Selection criteria cited were seniority, managerial talent, character, good personality, and proficiency in English language. The majority of the managers received some training in language and Singaporean customs before their posting to Singapore.

All Japanese managers felt that the overseas assignment was a plus for their career in the long-run. The reasons were that "promotion is difficult at home", and "contribution to company is higher when on overseas assignment". However, they preferred to work in Japan because of their concern about children's education and uprooting their families to stay in Singapore.

All Japanese subsidiaries implemented some form of systematic management development programmes to groom local talents for managerial positions. A feature of the Japanese management system which the Singaporean employees find it quite difficult to deal with is the slow career promotion in Japanese subsidiaries. This is because the Japanese feel responsibility for the long-term welfare of employees and therefore promotions are very slow as compared to U.S. subsidiaries and other manufacturing companies. As a result, the Japanese generally do not like very ambitious people, who if not promoted quickly enough tend to leave the company within a short period. Employment and individual development in Japanese firms seem to be more attractive for people who do not mind progressing slowly and steadily with long-term employment and job security. All Japanese subsidiaries prefer to recruit workers fresh from universities, polytechnics and schools and provide them with on-the-

job training. It is also easier to indoctrinate and train these new workers in the Japanese work ways. Most Singaporean employees, however, prefer quick promotion to slow and steady promotion. One common complaint was the tendency of most Singaporeans to leave for better paying jobs after completing their training in the company. Job-hopping was described by many Japanese as a national sport for Singaporeans who move to another company for a few extra dollars. Many Japanese subsidiaries complained that they had wasted a lot of their time training job-hoppers. Japanese subsidiaries felt that Singaporean employees as a lot, are more complacent, less self-motivated, and striving as compared to the Japanese. The Japanese felt that when Japanese expatriates leave, Singaporean management would find it very difficult to run the company efficiently.

### Analysis

The Japanese subsidiary managers were selected and assigned non-voluntarily. In contrast, the U.S. subsidiary managers positions were generally filled on a voluntary basis. Japanese companies generally provide some training for their managers before posting them to Singapore. Managerial talent appears to be a major selection criteria in appointing a subsidiary manager for both U.S. and Japanese companies. Both U.S. and Japanese subsidiaries implemented some form of systematic management development programmes to groom and develop local talents for managerial positions. U.S. subsidiaries tend to attract better employees

because of its system which provides for quick promotion and higher salary for the better candidates. Interview findings suggested that a capable fresh university graduate could reach the level of departmental manager within two years of joining an U.S. subsidiary as compared to at least five years for most Japanese subsidiary. Japanese subsidiaries prefer to recruit workers fresh from universities, polytechnics and schools because it is easier to train and indoctrinate these new workers in the Japanese work ways. In contrast, U.S. subsidiaries prefer to recruit experienced worker to save time and money in training inexperienced workers.

The interviews also confirmed that both U.S. and Japanese subsidiaries in Singapore regularly send their workers to attend short courses at the various governmental training institution to upgrade them. Lack of technical skills of workers and managerial skills of executives were the reasons quoted by the subsidiaries for their emphasis in training.

#### Promotion Criteria and Loyalty :

##### U.S. subsidiaries

The majority of U.S. subsidiaries attempted to instill loyalty but admitted that they were not successful. However all companies would resort to layoffs in times of slack demand and hiring of more employees in times of high demand. Performance rather than seniority is the main criterion for promotion of employees.



### Japanese subsidiaries

All Japanese managers attempted to instill loyalty to the organization in their Singaporean workers. Most believed that they were not successful. Their observations were that Singapore workers preferred to have high salaries rather than security of a life-time job. Hence many good employees left for higher paid jobs after acquiring skills in their company and striving for life-time employment and loyalty to the company seemed unrealistic. One of the common complaint was that Singaporean employees are too impatient to wait for promotion. All Japanese subsidiaries kept their workers in times of slack demand following their parent company's tradition. However, all companies indicated that retrenchment of workers would be inevitable if the survival of the company is at stake since it would be in the interest of the majority of workers for the company to resort to retrenchment rather than to close the company. In times of high demand, the Japanese subsidiaries preferred overtime to hiring new employees. Both seniority and performance were taken into consideration for promotion by all the companies.

### Analysis

Both U.S. and Japanese subsidiaries are not successful in instilling loyalty to the organization in their Singapore workers. Virtually all U.S. subsidiaries would resort to recruitment of new workers during times of high demand and retrenchment in times of slack demand. In contrast no Japanese subsidiaries would resort to retrenchment of employees in times of slack demand and during times

of high demand prefer to go on overtime. It is normal for Japanese subsidiaries to work on overtime for prolonged period during times of high demand. U.S. subsidiaries considered performance as the main criteria for promotion while Japanese subsidiaries consider both seniority and performance as main promotion criteria. All Japanese subsidiaries considered Singaporean employees regardless of their levels as too impatient to wait for promotion. In contrast, U.S. subsidiaries do not face this problem.

Business/Government Relations and Labour Relations :

Both U.S. and Japanese subsidiaries managers observed that the government do not interfere with their activities. However both groups stressed that the annual National Wage Council (NWC) recommendation, employer's Central Provident Fund (CPF) contribution of 25% employee's salary, payroll tax 2% and skill development funds contribution of 4% were making their operations in Singapore more expensive than other South East Asian regions. Labour relations were cited as excellent with no day lost through strike for the past eight years for the entire country. The strict labour law was the major reason for the complete absence of strikes for the past eight years. In fact, Singapore's eight-year strike-free record was broken only on 2nd January 1986 when 61 members of the Shipbuilding and Marine Engineering Employees' Union (SMEEU) went on strike at a U.S. marine engineering subsidiary over alleged anti-union activities. The strike lasted only two days. The company and union agreed to proposals for a settlement at the Labour Ministry in

Singapore. Both National Trade Union Congress (NTUC) and SMEEU expressed regrets that the eight-year strike-free record had to be broken because of what they considered to be the management's regrettable behaviour. The last strike was by employees of a sheet-metal factory in 1977.

### Analysis

The above observations were recorded in 1985. The dissatisfactions of the employers were noted by the Singapore government and commencing from April 1986 the employer's Central Provident Fund (CPF) contribution of 25% was reduced drastically to 10%, the National Wage Council (NWC) recommendation and payroll tax were abolished and the skill development funds contribution of 4% was reduced to 1%. The National Trades Union Congress (NTUC) reacted positively by initiating pay-cuts and pay freeze on their own accord. These moves were welcomed by all employers.

### The Singaporean Worker :

#### U.S. subsidiaries

Most subsidiaries managers perceived that the Singaporean workers to be equally hardworking and having equally good work attitude as compared to the U.S. workers. Most believed that there were no significant difference except one company which conceded that "Singaporean worker is definitely more productive than the U.S. worker". However, Singaporean workers were considered to be



lacking in technical skills as compared to the workers at the parent companies.

### Japanese subsidiaries

All managers perceived the Singaporean worker to be less hardworking and lacking technical skills as compared to the Japanese worker. Most believed that Singaporeans are good individual workers but bad team workers as compared to the Japanese. Absenteeism and lateness for work were much higher for Singaporeans as compared to the Japanese. Examples of bad work attitudes of Singaporean workers quoted by Japanese subsidiaries were workers' absenteeism for many days before and after festive seasons, refusal to do overtime work, going to canteen during working hours, pretending to be sick, and going home early.

### Analysis

The "average" Singaporean worker seems to be equally productive when compared to U.S. worker but less productive when compared to Japanese workers. Singaporean workers were individualistic and not team workers as compared to the Japanese. Some Japanese companies were dissatisfied that the Singaporean workers have no real idea of factory work and joined the manufacturing companies only for monetary returns. Japanese also considered Singaporeans as having poorer work attitudes as compared to the Japanese. U.S. subsidiaries appeared to be satisfied with the Singaporean workers. However, both U.S. and Japanese subsidiaries considered the

Singaporean workers as lacking in technical skills as compared to workers in the parent companies.

Recreational activities for employees :

Both U.S. and Japanese subsidiaries sponsored recreational activities such as badminton, picnics, squash, company parties, athletics, and other related activities. The Japanese subsidiaries subsidized on the average S\$5.00 per employee per month compared to approximately S\$8.00 per employee by the U.S. subsidiaries.

Communication with parent companies :

There were no problems in communicating with parent companies. Both U.S. and Japanese subsidiaries communicated with their parent companies using telephone communication and telex messages. In some subsidiaries there were on-line direct computer links with their parent companies. In addition, trips to their parent companies were made from once a year to once every three years for consultation.

Problems encountered in subsidiaries :

U.S. subsidiaries

U.S. managers seem to be satisfied with the quality levels attained by Singaporean workers. They did not encounter resistance to change in managerial practices. Most U.S. managers also agreed that their overseas staff integrate well with the local staff. However,

some U.S. subsidiaries experienced poor quality decision-making by Singaporean middle management personnel and poor quality suggestions from subordinates.

#### Japanese subsidiaries

Japanese managers found it difficult for their subsidiaries to attain quality levels similar to those of Japan. Some estimated Singapore to be least 10 years behind Japan. Although there was no significant resistance to change in managerial practices, difficulties were reported by the Japanese managers in the implementation of their normal management practices such as suggestion schemes and quality control circles. The majority mentioned that it was almost impossible to initiate quality control circles activities on a voluntary basis. The singing of company song and morning exercises which are compulsory in the Japanese parent companies are very difficult to implement in Singapore.

Integration of Japanese and local staff was reported to be difficult mainly due to language problems. Most Japanese have poor command of English and virtually all Singaporeans do not understand Japanese.

#### 8.4 Summary of the Interview Analysis

Generally the U.S. subsidiaries' managers perceive that U.S. managerial practice in its pure form can be used in Singapore. However, Japanese managers believe that some modification or



hybridization is necessary. Japanese managers perceive Singaporean workers as "individualistic" and not "group or team worker". Consequently Japanese management cannot be practised in its pure form in Singapore. Life time employment practice is also unrealistic in Singapore as most Singaporean employees prefer high salaries and quick career promotions to job security of the Japanese lifetime employment system. Unlike the Japanese, the Singaporean employees are very conscious about their job designation or title, prefer to accept jobs with prestigious titles, and do not like to do jobs not included in their official job designation or duties.

The major findings as suggested by the interview analysis are summarized as follows :-

1. Both U.S. and Japanese methods of decision-making appeared to be applicable to Singapore without much modification. However, the Japanese method may encounter dissatisfaction from the more capable Singaporean employees who prefer to be given the authority to make decisions instead of following the Japanese way of decision-making by consensus.
2. Both the U.S. and Japanese subsidiaries implemented some form of systematic management development programmes to groom and develop local talents for managerial positions. However, the Japanese subsidiaries found it difficult to retain high-calibre Singaporean employees as they normally left for better paying jobs after completing their training.

3. Japanese subsidiaries prefer to recruit workers fresh from universities, polytechnics, and schools and provide these new workers with on-the-job training. U.S. subsidiaries, however, prefer to recruit experienced workers in order to save time and money in training inexperienced workers.
4. The U.S. subsidiary would resort to layoffs in times of low demand but no Japanese subsidiary would resort to layoffs except when the company survival is at stake. Seniority and performance were the main criteria for promotion used by both groups of subsidiaries although U.S. subsidiaries emphasize more on performance rather than seniority.
5. Business/Government relations and labour relations were good except that operating costs in Singapore were higher than other neighbouring countries. Trade unions were considered to have good and positive attitudes.
6. The "average" Singaporean worker was equally productive and having equally good work attitude when compared to the U.S. worker but less productive and having poorer work attitude when compared to Japanese workers. Singapore workers were "individualistic" as compared to the Japanese workers.
7. U.S. managers found that the quality levels attained by their subsidiaries in Singapore were approximately equal to their U.S. parent companies whereas the quality levels attained by Japanese

subsidiaries in Singapore were below their Japanese parent company.

8. Both U.S. and Japanese subsidiaries considered the Singapore government as a good government in terms of the support given to the manufacturing industries.

### 8.5 Conclusions

Firm productivity data was obtained from 10 U.S. and 11 Japanese subsidiaries during the interviews of a total of 40 U.S. and Japanese subsidiaries based in Singapore. The analysis of firm productivity data given in section 8.3 suggests that firm productivity of U.S. subsidiaries were higher than Japanese subsidiaries in all the four industrial sectors studied. The findings obtained from the interviews concurred with the findings of questionnaire analysis in the preceding chapter in that U.S. subsidiaries have less difficulty in adjusting to the environmental conditions in Singapore, have better management practices and displayed higher management effectiveness. More detailed information were also obtained concerning the problems faced by Japanese subsidiaries in Singapore. The interview analysis shows that certain characteristics of the Japanese management system such as decision-making by consensus, promotion based on both seniority and performance, quality control circle activities, and suggestion schemes face difficulty of implementation in the Singapore environmental conditions.



The reasons for the higher firm productivity in U.S. subsidiaries may be explained from the research model formulated in section 5.1 for the comparison of the transferability of the U.S. and Japanese management system to Singapore manufacturing industry. The inclusion of firm productivity as the effectiveness criteria for the research model was discussed in section 4.1 and research model formulated assumes that: (1) firm productivity is a function of management philosophy, management practices and management effectiveness, and the external environmental conditions; (2) management effectiveness is a function of management philosophy, management practices, and the environmental conditions; and (3) management practices are functions of management philosophy and the external environmental conditions.

It is evident from the interviews that although Japanese subsidiaries in Singapore perceived that they practised better management philosophy than U.S. subsidiaries, the environmental conditions in Singapore is not receptive to some characteristics of the Japanese management philosophy and this setback is one of the explanations for the Japanese subsidiaries having a lower firm productivity than U.S. subsidiaries. Another explanation is the fact that both the interview analysis and questionnaire survey suggested that the environmental conditions in Singapore are more favourable to the U.S. management system. In addition, U.S. subsidiaries perceived that they have better management practices and higher management effectiveness as compared to Japanese subsidiaries. Based on the assumptions of the research model, it is

evident that the better results obtained by the U.S. subsidiaries in terms of environmental conditions, management practices, management effectiveness combined with the fact that certain characteristics of the Japanese management philosophy face difficulty of implementation in the Singapore environmental conditions have resulted in U.S. subsidiaries having higher firm productivity than Japanese subsidiaries.

In conclusion,, it can be suggested that the higher firm productivity of the U.S. subsidiaries as compared to the Japanese subsidiaries based in Singapore are due to (1) the environmental conditions in Singapore are not receptive to certain characteristics of the Japanese management system; and (2) the environmental conditions in Singapore are more favourable to the U.S. management philosophy and U.S. subsidiaries have better management practices and higher management effectiveness as compared to Japanese subsidiaries.

## PART 3

### SUMMARY AND CONCLUSIONS

Part 3 consists of the concluding chapter which summarizes and examines the findings of the research.

Evaluation of the research findings shows that most findings can be substantiated by other studies and also suggests that U.S. parent companies have no difficulty in transferring U.S. management system to their subsidiaries in Singapore whereas the Japanese parent companies encounter some difficulty. The difficulty of implementing Japanese management in Singapore is discussed and the research findings are further validated by cross-checking with recent reports and developments in Singapore.

Based on the results of the research, discussions on the research methodology and implications for the future study of comparative are also presented. Finally suggestions are made for future research.



## CHAPTER 9

### CONCLUSIONS

#### 9.1 Introduction

This concluding chapter presents a summary of the research findings and evaluates these findings with specific reference to the research objectives defined in chapter one. In addition, discussions on the research methodology, significance of the research findings, and the implications of the research for future methodology are included. Finally, suggestions for future research are made based on the experience gained from this research.

#### 9.2 Summary of the research findings

This section presents a summary on the findings of questionnaire analysis (chapter 7) and interview analysis (chapter 8). The main purpose is to cross-check these findings to ensure their validity. The summary follows :-

##### 9.2.1 Environmental Conditions

Questionnaire analysis suggested that Japanese subsidiaries experienced more difficulty in adapting to the Singapore environmental conditions. Japanese subsidiaries considered Singaporean workers as lacking in good attitude toward the person in authority, lacking in teamwork, having lower literacy level, lacking

in both skilled and unskilled labour, and having poorer attitude toward education. U.S. subsidiaries in Singapore, however, experienced lower literacy level of workers, shortage of skilled and unskilled labour but better conditions in terms of workers' teamwork, better attitude toward education, better union-labour relationship, and better government attitude toward manufacturing industries.

Interview findings were in agreement with the questionnaire findings. All Japanese subsidiaries interviewed pointed out the relatively poor attitudes of Singaporean employees at both senior and lower level when compared to Japan. Singaporean workers indicated that they considered Japanese employers as extremely difficult to work with. Lower salaries, extremely slow advancement and promotion, and hardwork were the major complaints. In contrast, the interviews showed that U.S. subsidiaries generally agreed that Singaporean workforce have better working attitude and Singaporean government's attitude toward manufacturing is better as compared to those of United States. Thus, this study suggests that environmental conditions in Singapore are more favourable to U.S. management systems as compared to Japanese management systems.

#### 9.2.2 Management philosophy

Questionnaire data suggest that Japanese subsidiaries and Japanese parent companies perceived that they showed greater management's concern for employee development as compared to U.S. subsidiaries.

U.S. subsidiaries in Singapore were shown to have the lowest tendencies to provide permanent employment. In the sectoral level, shipbuilding, automotive, and engineering services sector also have lower tendency to provide permanent employment as compared to the other three industrial sectors. The analysis of questionnaire data also suggests that U.S. subsidiaries in electronics and electrical sector and Japanese subsidiaries in shipbuilding, automotive and engineering services sector have the lowest tendency to provide permanent employment. Finally, the degree of decision-making by consensus practised by Japanese subsidiaries was found to be higher than those of U.S. subsidiaries and Japanese subsidiaries also displayed higher solicitation of employee's suggestions than U.S. subsidiaries.

Interview findings concurred with the questionnaires findings. In addition it was found that no Japanese subsidiaries would resort to layoffs except when the company's survival is at stake whereas it is normal for U.S. subsidiaries to resort to layoffs in order to maintain the company's profitability.

Hence, the study suggests that Japanese subsidiaries generally perceived that they practise better management philosophy than U.S. subsidiaries.

### 9.2.3 Management functions/practices

Analysis of questionnaires data suggested that U.S. subsidiaries have less difficulty in managing the local workforce as compared to



Japanese subsidiaries. Interview findings also suggested that U.S. subsidiaries have less difficulty in managing the local workforce. U.S. managers were satisfied with the quality levels attained by Singaporean workers. In contrast, Japanese experienced difficulties in quality control and in the implementation of their normal management practices such as suggestion schemes, quality control circles, daily singing of company's song and morning exercises which are compulsory in every Japanese parent company. Most U.S. managers also agreed that their expatriate staff integrate well with the local staff. Thus the study suggests that management functions/practices of U.S. subsidiaries are more successful than Japanese subsidiaries.

#### 9.2.4 Management effectiveness

Questionnaires analysis suggested that Japanese subsidiaries lack the ability to attract and retain high-level manpower as compared to U.S. subsidiaries. Employees in Japanese subsidiaries in Singapore also have lower morale and satisfaction than U.S. subsidiaries. Japanese subsidiaries also showed significantly lower efficiency than their parent companies. However, departmental relationships in Japanese subsidiaries are better than U.S. subsidiaries but its utilization of high-level manpower is lower.

In contrast, U.S. subsidiaries perceived that they have less difficulty in adapting to the Singapore environment and Singaporean workforce have significantly better attitude toward their U.S.

expatriate managers as compared to Japanese managers.

The findings from the interviews were generally similar to those of the questionnaires. In addition, high calibre and ambitious Singaporean employees find it difficult to work with the Japanese and do not stay long with Japanese subsidiaries. It can be suggested that the management effectiveness of U.S. subsidiaries is higher than those of Japanese subsidiaries

#### 9.2.5 Firm productivity

The summary of productivity data and type of employees given by 10 U.S. subsidiaries and 11 Japanese subsidiaries is given in page 300. The combined data of the four industrial sectors suggest that U.S. subsidiaries have significantly higher labour and capital productivity. The average annual labour turnover rate of 5% per annum is significantly lower than Japanese subsidiaries' labour turnover rate of 19% per annum. The managerial to non-managerial staff ratio of U.S. subsidiaries is also higher than Japanese subsidiaries suggesting that U.S. subsidiaries tend to have more elaborate management structures and employ more specialists/professionals.

These data were analysed in chapter eight which suggested that U.S. subsidiaries were more productive in all four industrial sectors studied. Since U.S. subsidiaries and Japanese subsidiaries operate under the same environmental conditions in Singapore, the analysis suggests that U.S. management system resulted in higher firm

productivity as compared to Japanese management system.

### 9.3 Evaluation of the research findings

This section presents an evaluation of the research findings as compared to findings of other studies. The discussions are presented in the following sequence:-

- 9.3.1 Evaluation of the questionnaire findings
- 9.3.2 Evaluation of the interview findings
- 9.3.3 Summary of evaluation of the research findings
- 9.3.4 Difficulty of implementing Japanese management system  
in Singapore

#### 9.3.1 Evaluation of the questionnaire findings

In the questionnaires analysis (chapter seven), the perceptions of U.S. and Japanese parent companies and their subsidiaries based in Singapore on each of the 10 indicators describing the four management variables (environmental conditions, management philosophy, management functions/practices, and management effectiveness) were analysed. An evaluation of questionnaire findings against the findings of other studies is necessary in order to establish the similarities and differences between this research and other studies. In addition, findings from other studies may help to explain the problems encountered by U.S. and Japanese management systems in Singapore. Finally, new findings pertaining



to the performance of U.S. and Japanese' management systems in Singapore which are not covered by other studies are cross-checked with the interview analysis in chapter eight. The following is an evaluation of the questionnaire findings :-

Questionnaire 1: Environmental Conditions

The following evaluation refers to the summary of findings given in page 185.

Finding 1

Rohlen (1976) and Sethi (1973) pointed out that in a Japanese corporation, authority is absolute and greatly respected. The authority is based primarily on customs, traditions, leadership style and the nature of relationships between senior and junior employees. However, in Singapore there are no strong traditions or customs to make the person in authority to be greatly respected as in the case of Japan. Consequently, the average Singaporean workers lack good attitude toward a person in authority when compared to the Japanese workers. Hence finding (1) generally agrees with previous studies.

Finding 2

Alston (1986:39) stressed that the Japanese are inhibited by the fact that their society is group-oriented; all Japanese are taught to want to live up to group expectations. In contrast, an American group leader typically cares less for group harmony than results and interview findings also showed Singaporean workers to be

individualistic. Thus, finding (2) which suggests that Japanese workers have a significantly higher tendency toward teamwork concurred with Alston's study and the interview findings.

### Finding 3

Sirota and Greenwood (1971) found that Japanese workers are higher than others in their desire for earning opportunities. Americans see competition as one of the most productive ways of distributing rewards (Alston 1986:71). The average Singaporean prefers high salary and is generally materialistic. All these agree with findings (3) that the importance of wealth among the four groups of firms is the same.

### Findings 4 to 10

Most previous studies do not address questions asked from (4) to (10) which also involved the fast changing environmental conditions in Singapore. These findings, however, generally agree with information given by the U.S. and Japanese managers of subsidiaries based in Singapore during the interviews and had been examined in the interview analysis (chapter 8).

### Questionnaire 2: Management philosophy

The following evaluation refers to the summary of findings given on page 187.

### Finding 1

In a typical Western work organization, most employers and employees share the attitude that the connection between them should be restricted to those activity directly related to completion of a specific job. In contrast, Japanese tradition and practice suggest a higher degree of involvement between supervisor and worker in after-work situations (Abegglen 1958, Whitehill 1968, Whitehill & Takagawa 1981).

Alston (1986:42) states :

"When asked what the goals of corporations are, Japanese managers will always first answer that a company's primary goal is to take care of the workers ('wa') and next to help the Japanese nation by increasing exports. Then they will say that the company exists to serve the customers. Only afterwards, if at all, will there be mention of stockholder profits and the company's credit balances. The opposite is usually true in America. Americans managers are taught (and expected) to stress production and profit first."

Finding (1) demonstrates that Japanese subsidiaries and parent companies indeed showed greater management concern for employee development as compared to U.S. subsidiaries and their parent companies.

### Finding 2

Finding (2) suggests that Singaporean employees of U.S. and Japanese subsidiaries perceived their companies as lacking in concern toward individual development as compared to the employees of U.S. and



Japanese parent companies. The massive retrenchment of workers by U.S. subsidiaries during times of low demand; retrenchment, relatively low salary and slow promotion in Japanese subsidiaries; and lack of formal and continuous training in both U.S. and Japanese subsidiaries appear to be the main reasons for the Singaporean employees' perceptions that the subsidiaries lack concern toward individual development of their employees. The significantly better employees' perceptions of Japanese parent company's concern toward employees' development could be attributed to the same reasons given by Alston (1986:42) mentioned in finding (1).

### Finding 3

Abegglen (1958), Clark (1979) and Alston (1986) found that in comparison to Western practices, there was indeed a lifetime employment system in Japan although many people left the company for one reason or another. Finding (3) agrees with Abegglen, Clark and Alston concerning the significantly higher tendency of Japanese companies to provide permanent employment. In addition, it suggests that U.S. subsidiaries has the lowest tendency to provide permanent employment which could be attributed to policy of retrenching workers by U.S. subsidiaries in times of low demand to maintain profitability. The other finding, concerning differences among the four industrial sectors, has been discussed in detail in the interview analysis.

#### Finding 4

Alston (1986:57) in describing the differences between U.S. and Japanese decision-making process states :

"There is less need for close supervision in a Japanese work setting... Being part of the decision-making process leading up to a consensus, a Japanese line worker must accept the responsibility for his production.... The situation is different in an American factory. Authority is highly structured and an assembly line worker is given detailed instructions on what he must do. He would not normally be encouraged to use his initiative. Instead, this factory hand is told that he has to obey the foreman and mind his business if he wants to keep his job:"

Finding (4) suggests that most Japanese subsidiaries based in Singapore follow their parent companies' method of decision-making system although with some difficulties since Singaporeans prefer to be given the authority to make decisions instead of making decisions based on consensus. This may account for the lower degree of decision-making by consensus in Japanese subsidiaries as compared to their parent companies. Both Japanese subsidiaries and Japanese parent companies showed significantly higher degrees of decision-making by consensus as compared to their U.S. counterparts. Thus, this finding concurred with many previous studies such as Matsuda and Morohoshi (1973-74), Johnson & Ouchi (1974), Yoshino (1968, 1979), Drucker (1971), Sethi (1984) and Alston (1986) concerning the Japanese method of decision-making by consensus.

#### Finding 5

Finding (5) suggests that Japanese subsidiaries based in Singapore

have a lower degree of autonomy as compared to U.S. subsidiaries. The high labour turnover and the lack of ability to attract and retain high-level management (refer to questionnaire 4, finding 1) may have adversely affected the degree of autonomy in Japanese subsidiaries. During the interview analysis, the researcher observed that all Japanese subsidiaries not only have Japanese as Managing Directors but Assistant Managing Directors, Purchasing Managers, Production Managers, and particularly Financial Managers were all Japanese and company policies were dictated by their Japanese parent companies. The Personnel Manager was the only exception and was usually a Singaporean. In contrast, the Managing Directors for U.S. subsidiaries were Americans but the other key positions were held by Singaporeans.

#### Findings 6, 7, 8, and 9

Most U.S. and Japanese subsidiaries based in Singapore are relatively new as compared to their parent companies. The interview analysis indicated that most subsidiaries merely act as a production facility for their parent companies. The relatively recent establishment of these subsidiaries and the limited functions served by these subsidiaries suggest that not all policies of the parent companies are implemented. Another reason is that most U.S. subsidiaries resort to retrenchment during periods of low demand and some have moved to neighbouring countries because of cheaper labour. Hence, there is no real need for these U.S. subsidiaries to implement policies similar to their parent company. Findings (6), (7), (8) and (9) are therefore confirmed by the interview analysis.



#### Finding 10

Finding (10) is substantiated by Matsuda and Morohoshi (1973-74) finding that Japanese tend to evaluate employees according to seniority and education and their U.S. counterparts by capability and efficiency. Although Japanese parent companies place heavy emphasis on seniority, the interview analysis indicated that Japanese subsidiaries based in Singapore accelerated promotion to keep the better employees. This adaptation by Japanese subsidiaries substantiates finding (10) in which Japanese subsidiaries were found to have a higher tendency to give promotion on the basis of performance rather than seniority as compared to their parent companies.

#### Questionnaire 3: Management functions/practices

The following evaluation refers to the summary of findings given in page 190.

#### Findings 1, 2, 3, 5, 6, 7, 9, and 10

The poorer evaluation given by U.S. and Japanese subsidiaries concerning the above findings is due mainly to the reason that these subsidiaries are relatively new factories as compared to their parent companies. Most U.S. and Japanese subsidiaries are less than ten years old and it would take some time before their management functions/practices can match their parent companies.

#### Finding 4

Alston (1986:92) in discussing the practice of scientific management in America states :

"The logic of the scientific management approach demands that managers treat workers as they are machines. This is why time-and-motion studies became popular in American industry from the 1900's to the 1950's. Timing how fast a person should do a task reduces him to a machine analog... While scientific management is over eighty years old, the attitudes which separate manual workers from others persists today."

Finding (4) which suggests that standard setting for production workers is carried out more systematically in U.S. parent companies concurred with Alston's finding. Most of the standard settings for U.S. subsidiaries based in Singapore were derived from the U.S. parent companies and differences in physical stature were rarely taken into account. The researcher also noted during the interviews that large U.S. subsidiaries usually have a industrial engineering department to carry out time-and-motion studies but such time-and-motion studies were rarely carried out by Japanese subsidiaries.

#### Findings 7 and 8

The lower literacy level and shortage of trained or skilled workers (refer to findings 4 and 5 of questionnaire 1) and relatively high labour turnover rates in U.S. and Japanese subsidiaries are the main reasons contributing to the subsidiaries' managers lack of

confidence in Singaporean subordinates shown in finding (7). Most managers will have higher confidence in a qualified and trained employee with proven service rather than a new and lesser qualified employee. Finding (8) suggests that Japanese management system faces more difficulty in adapting to the Singapore environmental conditions. The difficulty of implementing Japanese management system in Singapore is discussed in section 9.3.4.

Questionnaire 4: Management effectiveness

The following evaluation refers to the summary of findings given in page 192.

Findings 1, 2, and 3

Finding (1) suggests that U.S. and Japanese parent companies and U.S. subsidiaries in Singapore have no difficulty in attracting and retaining high-level manpower. Noda and Glazer (1968) and Tsurumi (1978) found that the Japanese lifetime employment and seniority-based reward system were effective in attracting and retaining employees in Japan. Finding (1) concurred with Noda and Glazer (1968) and Tsurumi (1978) as far as Japan is concerned. However, the interview findings in chapter eight suggested that the average Singaporean prefers high salary and quick promotion to lifetime employment and seniority-based reward system. Hence U.S. subsidiaries are able to attract and retain high-level employees by offering higher salaries and quicker promotions. In contrast, Japanese subsidiaries based in Singapore using the lifetime



employment system lack the ability to attract and retain high-level manpower because of their lower salaries and slower promotions. The difficulty of implementing the Japanese lifetime employment system in Singapore is further discussed in section 9.3.4. The lower salaries and slower promotions offered by Japanese subsidiaries also contributed to the lower employee morale and satisfaction as shown in finding (2) and higher turnover rate and absenteeism in finding (3).

Matsuda and Morohoshi (1973-74) noted that Japanese management seeks to maintain harmony within the organization and trouble-free working relationships are preferred to even if efficiency will suffer. The presence of such attitude and harmony often leads to high employee morale within the Japanese firm. The American managers also desire harmony but their priority is productivity and this tends to have a demoralizing effect on employees. Findings (2) and (3) which suggest that employees in Japanese parent companies have high morale and exceptionally low labour turnover and absenteeism concurred with Matsuda and Morohoshi's study.

#### Findings 4 and 5

Alston (1986:43) in comparing Japanese group harmony to American individualism states :

"Because of the concern for group harmony, the individual Japanese is rewarded when he thinks of others before himself. Instead of acting "selfishly," he is encouraged to advance the fortunes of his immediate work group, his department or division, his company, his nation, and his family.

He also must maintain harmonious, unselfish relations with members of his company's entrance class, fellow alumni, company, team, and so on. This may seem repressive to an American who sees himself as more of an individual, and it is."

Alston's study concurred with finding (4) which suggests that interpersonal relationships in organizational settings are best in Japanese parent companies.

The American managers with productivity as first priority, sets up complex authority, responsibility, and accountability relationships. In contrast, the individual elements of Japanese organizations are rarely burdened with assignments of authority, responsibility, and accountability. Instead, an entire department is entrusted with responsibility which is actually non-responsibility known as the "ringi" system (Matsuda and Morohoshi, 1973-74). This concurs with finding (5) which suggests that departmental relationships in Japanese subsidiaries and their parent companies were better than those of U.S. subsidiaries and their parent companies.

#### Finding 6

Alston (1986:42) in describing the Japanese loyalty to his company states :

"Managers also try to develop company-wide enthusiasms which are stronger than any lesser loyalty. Such a balance is hard to achieve. This is done by company-wide rewards and bonuses, frequent team rotation, and the like. The Japanese are aware that a delicate balance exists among a person's multiple group memberships and loyalties. But company loyalty is more important than any others, even those based on a worker's family ties."

Finding (6) which suggests that executives in Japanese parent companies perceive company's objective as more important than departmental objective concurred with Alston's study. Finding (6) also suggests that Japanese subsidiaries based in Singapore fail to inculcate similar executive attitudes toward company's objectives as their parent company.

#### Findings 7, 8, 9 and 10

Data from interview analysis indicated that managerial staff employed by Japanese subsidiaries based in Singapore accounted for approximately 7% of the total staff as compared to 11% for U.S. subsidiaries. Hence finding (7) which suggests that utilization of high-level manpower is significantly lower for Japanese subsidiaries in Singapore is substantiated by the interview data. Findings (8), (9), and (10) also concurred with the interview findings discussed in chapter eight. The relatively better results obtained by U.S. subsidiaries as compared to Japanese subsidiaries are mainly due to the higher salaries and quicker promotions given by U.S. subsidiaries.

#### Summary

The foregoing evaluation of the questionnaire findings shows that most findings can be substantiated by either the results of other studies or information obtained during the interview analysis. This evaluation therefore validates the findings of the questionnaire



analysis given in chapter seven.

Findings concerning the problems faced by subsidiaries in Singapore are new findings as no previous research has been carried out in this area. A more thorough examination of such problems is necessary. This is carried out by the evaluation of interview findings (section 9.2.2).

### 9.3.2 Evaluation of interview findings

The interview analysis involving forty U.S. subsidiaries and Japanese subsidiaries in the four industrial sectors was discussed in chapter eight. Due to the problem of distance, it was beyond the scope of this research to interview the twenty U.S. parent companies and twenty Japanese parent companies. To avoid repetition, this evaluation excludes findings which had been evaluated in the preceding section. This evaluation depends mainly on the empirical data on productivity and employment obtained during the interviews.

The interview analysis in chapter eight suggests that all U.S. subsidiaries adopt the same management philosophy and organization structure as their parent companies. In contrast, Japanese subsidiaries face difficulty in adopting the same management philosophy as their parent companies and have to make major changes to suit the Singaporean workforce. The comparison between comparable U.S. subsidiaries and Japanese subsidiaries based in Singapore using the summary of productivity and labour turnover data

given in the next page suggests that U.S. subsidiaries based in Singapore are more productive and have significantly lower labour turnover as compared to Japanese subsidiaries. The summary also shows significant variations among the four industrial sectors. As discussed in chapter eight, each industrial sector is predominantly characterized by a certain type of production process and the pace of technological change. The characteristics of each industrial sector and the results of comparison between U.S. and Japanese subsidiaries using productivity and labour turnover data from each industrial sector are summarized as follows :-

Industrial Sector 1 : Petrochemicals and chemicals industry

Characteristics : Very high capital investments, continuous production processes employing highly skilled employees and working three shifts.

Comparison between U.S. and Japanese subsidiaries :

U.S. subsidiaries are more established in this sector and have significantly higher labour and capital productivity and also lower labour turnover than Japanese subsidiaries.

Industrial Sector 2 : Precision engineering, industrial machinery  
and machine tools

Characteristics : Moderate pace of technological change with most technological changes resulting from applications

## Summary of Productivity Data

U.S. subsidiaries

Type of employees

Company	Labour Productivity	Capital Productivity	Number of employees	Labour Turnover p.a.
1A	\$230500	20%	503	4%
1B	\$185064	22%	127	6%
Average	\$207782	21%		5%
2A	\$32454	21%	87	6%
2B	\$40317	42%	568	1%
2C	\$29034	45%	1531	10%
Average	\$33935	36%		5.7%
3A	\$38937	17%	207	3%
3B	\$34330	15%	652	2.5%
3C	\$35834	13%	101	2%
Average	\$36367	15%		2.5%
4A	\$30186	29%	350	12%
4B	\$29680	23%	1848	3%
Average	\$29933	26%		7.5%
Grand Average	\$77004	24.5%		5%

Company	Non-Manual	Managerial	Singaporean	Non-Singaporean
1A	432 (86%)	71 (14%)	473 (94%)	30 (6%)
1B	108 (85%)	19 (15%)	121 (95%)	6 (5%)
Total	540 (86%)	90 (14%)	594 (94%)	36 (6%)
2A	79 (91%)	8 (9%)	84 (97%)	3 (3%)
2B	516 (91%)	52 (9%)	558 (98%)	10 (2%)
2C	1470 (95%)	81 (5%)	1175 (74%)	376 (24%)
Total	2065 (94%)	141 (6%)	2817 (82%)	389 (18%)
3A	192 (93%)	15 (7%)	182 (88%)	25 (12%)
3B	552 (85%)	100 (15%)	604 (92%)	48 (7%)
3C	91 (90%)	10 (10%)	100 (99%)	1 (1%)
Total	835 (87%)	125 (13%)	886 (92%)	74 (8%)
4A	302 (86%)	48 (14%)	342 (98%)	8 (2%)
4B	1612 (87%)	236 (13%)	1709 (92%)	139 (8%)
Total	1914 (87%)	284 (13%)	2051 (93%)	147 (7%)
Grand Total	5354 (89%)	640 (11%)	5348 (89%)	646 (11%)

Number of work shifts

Single shift : Companies 3A, 3B, 3C, 4A and 4B.

Two shifts : Companies 2A, 2B and 2C.

Three shifts : Companies 1A and 1B.

Japanese subsidiaries

Type of employees

Company	Labour Productivity	Capital Productivity	Number of employees	Labour Turnover p.a.
1JA	\$168000	10%	566	12%
1JB	\$ 55985	15%	85	10%
1JC	\$100108	11%	112	13%
Average	\$108031	12%		11.7%
2JA	\$24719	28%	196	20%
2JB	\$34715	23%	286	30%
2JC	\$29915	54%	1558	25%
Average	\$29783	35%		25%
3JA	\$25664	14%	290	20%
3JB	\$26902	12%	450	18%
Average	\$26283	13%		19%
4JA	\$28579	17%	486	16%
4JB	\$23812	21%	1516	20%
4JC	\$32755	16%	226	22%
Average	\$28382	18%		19.3%
Grand Average	\$48120	20%		19%

Company	Non-Manual	Managerial	Singaporean	Non-Singaporean
1JA	537 (95%)	29 (5%)	389 (69%)	177 (31%)
1JB	73 (88%)	10 (12%)	73 (88%)	10 (12%)
1JC	103 (92%)	9 (8%)	84 (77%)	26 (23%)
Total	713 (94%)	48 (6%)	548 (72%)	213 (28%)
2JA	176 (90%)	20 (10%)	186 (95%)	10 (5%)
2JB	275 (96%)	11 (4%)	208 (73%)	78 (27%)
2JC	1479 (95%)	79 (5%)	1138 (73%)	420 (27%)
Total	1930 (95%)	110 (5%)	1532 (75%)	508 (25%)
3JA	245 (84%)	45 (16%)	255 (88%)	35 (12%)
3JB	366 (81%)	84 (19%)	369 (87%)	81 (18%)
Total	611 (83%)	129 (17%)	624 (84%)	116 (16%)
4JA	440 (95%)	26 (5%)	440 (91%)	46 (9%)
4JB	1450 (96%)	66 (4%)	1427 (94%)	89 (6%)
4JC	212 (94%)	14 (6%)	214 (95%)	12 (5%)
Total	2122 (95%)	106 (5%)	2081 (93%)	147 (7%)
Grand Total	5576 (93%)	393 (7%)	4785 (83%)	984 (17%)

Number of work shifts

Single shift : Companies 3A, 3B, 4A, 4B and 4C.

Two shifts : Companies 2A, 2B and 2C.

Three shifts : Companies 1A, 1B and 1C.



of technology rather than development of new product and two working shifts.

Comparison between U.S. and Japanese subsidiaries :

U.S. subsidiaries have higher labour productivity and lower labour turnover than Japanese subsidiaries although capital productivity is approximately equal.

Industrial Sector 3 : Shipbuilding, ship-repairing, and engineering services

Characteristics : Production process is jobbing type or one-off type in nature, slow technological change and single working shift.

Comparison between U.S. and Japanese subsidiaries :

U.S. subsidiaries have significantly higher labour productivity and lower labour turnover than Japanese subsidiaries although capital productivity is approximately equal.

Industrial Sector 4 : Electrical and electronics

Characteristics : Rapid technological change and single working shift.

Comparison between U.S. and Japanese subsidiaries :

U.S. subsidiaries have higher capital productivity and lower labour turnover than Japanese subsidiaries although labour productivity is approximately equal.

From the summary of data on productivity and labour turnover it can be suggested that U.S. subsidiaries are particularly productive in industrial sector one and Japanese subsidiaries come closest to U.S. subsidiaries in terms of capital and labour productivity in industrial sector four. However, it should be noted that the sample of firms interviewed within each industrial sector is far too small for an accurate conclusion to be made on the differences among the four industrial sectors. In addition, in certain industrial sectors like the petrochemicals and chemicals sector, Japanese subsidiaries are relatively new as compared to U.S. subsidiaries which make the comparison in that sector inaccurate. Furthermore, the results of the questionnaire analysis using a total of 80 firms discussed in chapter seven do not suggest major differences among the four industrial sectors in the four management variables surveyed. In view of these shortcomings, it would not be accurate to draw conclusions on the differences among the four industrial sectors using the small sample of firm productivity and labour turnover data. As such, only the average firm productivity and labour turnover rate are used for comparing U.S. and Japanese subsidiaries since differences among the four industrial sectors cannot be accurately analysed.

The average labour productivity and capital productivity of U.S. subsidiaries are S\$77004 and 24.5% respectively as compared to S\$48120 and 20 of the Japanese subsidiaries. Thus, based on the average results, U.S. subsidiaries have significantly higher labour and capital productivity than Japanese subsidiaries. In addition, the average annual labour turnover rate of 5% per annum is significantly lower than Japanese subsidiaries' labour turnover rate of 19% per annum.

Alston (1986:2-4) in comparing the productivity gap between America and Japan states :

"While Americans can profit by learning how the Japanese work together, many Japanese managerial policies cannot be adopted by the Americans. ....certain economic sectors in America are less productive than Japan's, especially in steel and in manufacturing."

Although Alston (1986) suggests that Japanese companies in the manufacturing sector are more productive than American companies, the results of this research suggest that American subsidiaries are more productive than Japanese subsidiaries based in Singapore. This implies that Japanese subsidiaries have not been equally successful in transferring their management system to their plants in Singapore as compared to the U.S. subsidiaries.

### 9.3.3 Summary of evaluation of the research findings

The questionnaire analysis in chapter 7 and interview analysis in



chapter 8 suggest that U.S. subsidiaries do not face difficulty in adopting the same management system as their parent companies. Analysis of firm productivity also suggests that U.S. subsidiaries are significantly more productive and have lower labour turnover than Japanese subsidiaries. In contrast, Japanese subsidiaries face difficulties in adopting the same management system as their parent companies. The interview analysis in chapter eight also suggests that the environmental conditions in Singapore is favourable to U.S. management system but not receptive to some characteristics of Japanese management systems.

The evaluation in section 9.3.1 shows that most questionnaire findings concerning U.S. and Japanese management systems concurred with both the interview analysis and findings of other researchers. In addition, the evaluation of productivity data in section 9.3.2 suggests that Japanese subsidiaries have not been very successful in transferring their management system to their plants in Singapore.

One of the objectives of this research is to determine which features of U.S. and Japanese management are transferable to Singapore's manufacturing industry or in other words what are the difficulties face by the U.S. or the Japanese management system in Singapore. From the foregoing review, it is evident that U.S. parent companies have no difficulty in transferring their management system to their Singapore subsidiaries whereas the Japanese parent companies encounter some difficulties. This implies that the

difficulties faced by the Japanese subsidiaries are due to the unique features which distinguish Japanese management from U.S. management. It is therefore appropriate to discuss the difficulty of implementing Japanese management system in Singapore by focusing on these unique features (section 9.3.4).

#### 9.3.4 Difficulty of implementing Japanese Management System in Singapore

This section discusses the difficulties faced by Japanese subsidiaries in implementing Japanese management system based on the unique features identified sections 3.3.1 to 3.3.6.

##### Lifetime Employment (section 3.3.1)

Alston (1986:61) in describing the Japanese lifetime employment system states :

"Lifetime employment was developed to encourage a worker to stay where he was trained. This ensured that the company's investment spent on training a worker would not be lost. The company could feel secure that workers trained at company's expense would remain to repay these investment costs."

The interview analysis suggests that the average Singaporean worker prefers high salary and quick promotion to the job security of lifetime employment system. Many good employees left Japanese subsidiaries for higher paid jobs after acquiring skills in the companies. This makes lifetime employment unrealistic and wastes

the companies' investment in training them. In Japan, a worker who leaves his company will have to settle for a job with lower salary and status. In contrast, a good worker in Singapore normally obtains a better job with higher salary on leaving his company. Hence, this feature of the Japanese management system is not suitable in Singapore.

#### Decision Making by Consensus (section 3.3.2)

Japanese management values highly the spirit of harmony for goal achievement. The Japanese method of reaching decisions was designed to avoid pinpointing responsibility for mistakes (Matsuda and Morohoshi, 1973-74). In the "ringi" system (decision-making by consensus), consensus is stressed as the way of making decisions, while close attention is paid to the personal well-being of employees (Johnson & Ouchi, 1974; Sethi, 1984; Yoshino, 1968, 1979). The more capable Singaporean worker prefers to be given the authority to make decisions instead of following the Japanese way of decision-making by consensus. Hence this feature of Japanese management system is not popular with the Singaporean workers.

#### Infrequent and Implicit Performance Evaluation (section 3.3.3)

The Japanese performance appraisal system, however, is infrequent, informal, and implicit. The personnel department in each firm accumulates extensive dossiers and records of earlier merit ratings for each of the possible candidates for a higher position. The recommendations of the immediate supervisor and department manager



are checked at a higher management level before one is promoted to a higher position. This practice is true for both the managerial and non-managerial positions. High labour turnover in Japanese subsidiaries makes promotion based on extensive dossiers and earlier records difficult. In addition, the average Singaporean is too impatient to wait for promotion. Hence the Japanese performance appraisal system seems to amplify the problem of labour turnover and is not suitable in Singapore. Most Japanese subsidiaries attempt to retain the better employees by accelerating their promotions.

#### Non-specialized Career Paths (section 3.3.4)

Studies on the structure of Japanese companies have pinpointed two major organizational properties that distinguish a typical Japanese firm from Western organizations. These properties are the low degree of differentiation in occupational roles and high degree of rank differentiation (Abegglen, 1958; Dore, 1973; Yoshino, 1968). The interview analysis suggests that unlike the Japanese, Singaporean employees are very conscious about their job designation or title, and do not like to do jobs not included in their official job designation or duties. Thus the low degree of differentiation in occupational roles also contributes to the difficulty of implementing Japanese management system in Singapore.

#### Paternalism (section 3.3.5)

The paternalistic treatment given to employees by managers in Japan

has its origin in the feudal master - servant relationship. Although the modern Japanese state is a self-sufficient feudalistic society, some roots still remain from the distant past (Adams and Kobayashi 1969). It is common for the Japanese manager to feel obliged to know every employee's name, to greet him every morning, and to protect him. In return, the employee is expected to respect his boss, work hard for him, and give him his complete loyalty. This feature is well accepted by the Singaporean employees but Japanese subsidiaries generally fail to command their loyalty because low salary and slow promotion have eliminated the advantage of this feature. In addition, Japanese tradition and practice suggest a higher degree of involvement on the part of supervisor with worker in after work situations (Abegglen, 1958; Whitehill & Takezawa, 1968, 1981). Alston (1986:26-27) states :

"The Japanese accept the premise that employees and employers form cohesive social units. All members of a corporation develop systems of mutual obligations beyond what they are being paid to do... "Salarymen" living in large cities do not make friends with neighbors. These workers are rarely at home long enough to become acquainted with next-door neighbors, whether they live in apartments or single family houses. The ideal Japanese worker is one who comes home near midnight due to business responsibilities."

The average Singaporean employee does not mix work with family life and most factories find difficulty in getting workers to work overtime. The difficulty encountered in getting workers to work overtime even by paying 1.5 or 2 times the normal rate as indicated by Japanese subsidiaries during the interviews suggests that most

Singaporean workers would avoid after work involvement with supervisors. Thus the Japanese feature of higher degree of job involvement between supervisor and workers in and after work situation faces difficulty of implementation in Singapore. Hence, paternalistic treatment of employees by managers during and after work does not significantly improve employees' loyalty in Singapore.

#### Seniority-based Wage System (section 3.3.6)

Under the seniority - based wage system, the remuneration of a worker is determined primarily on the basis of the number of years he has spent with the company, subject to age and level of education at the time of entry. Most Japanese subsidiaries found that the average Singaporean worker would not work hard if remuneration and promotion were to be based on seniority. This difficulty is evident by the fact that most Japanese subsidiaries considered both performance and seniority when reviewing salary and promotion of the Singaporean worker. Hence, this feature of Japanese management system is difficult to implement in Singapore.

#### Summary

To summarize, the foregoing discussion suggests that all unique features of Japanese management system face varying degree of difficulty of implementation in the present environmental conditions in Singapore. In contrast, the common features of American management system which include short-term employment, individual



decision-making, individual responsibility, frequent evaluation and promotion, explicit formalized evaluation, specialized career paths, segmented concern for people, and performance-based wage system could be applied effectively in Singapore without change.

#### 9.4 Conclusions

The analysis of the questionnaire data from eighty companies and interview data from forty companies suggested that both U.S. and Japanese parent companies performed better than their subsidiaries in Singapore in almost all management variables studied. Firm productivity (in terms of labour and capital productivity) of U.S. subsidiaries in Singapore was also found to be higher than those of Japanese subsidiaries in all four industrial sectors studied and labour turnover rate of U.S. subsidiaries was significantly lower than Japanese subsidiaries.

Overall, the 44 two-way ANOVA tables (tables 5A to 9D) indicated that Japanese parent companies generally returned the highest score among the four groups of firms in all four industrial sectors for all the four management variables surveyed by questionnaires whereas the average score for Japanese subsidiaries in Singapore was generally the lowest. Further, in spite of the fact that Japanese parent companies returned significantly higher scores than U.S. parent companies, the average scores for U.S. subsidiaries were generally higher than those of Japanese subsidiaries for the majority of indicators surveyed by questionnaires. This implies

that Japanese subsidiaries face difficulties in transferring their management systems into Singapore. The interview analysis also suggests that Japanese subsidiaries based in Singapore face difficulties in implementing Japanese management system and U.S. subsidiaries do not have difficulty in implementing U.S. management system. Thus the overall results of this study suggested that the transfer of U.S. management system into Singapore's manufacturing industry is more successful than Japanese management system.

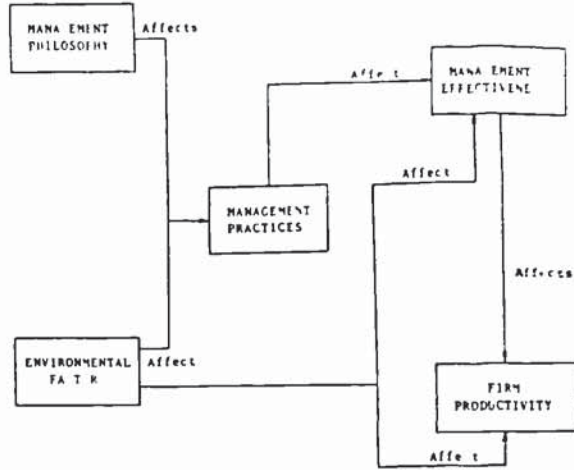
#### 9.5 Discussions on the research methodology

In chapter three the absence of appropriate and well designed methodologies was identified as one of the major problems confronting comparative management studies. To address this problem, a methodological review of various comparative management models was carried out in chapter four and the research model was formulated in chapter five. The schematic development of final research model and research design is presented in the next page.

##### 9.5.1 Research Model

The research model was formulated by adapting the approach used by the Negandhi-Prasad (1971) model. The Negandhi-Prasad model identifies basically the same external constraints as the Farmer-Richman (1965) model but recognizes management philosophy as an independent variable.

(1) RESEARCH MODEL



(2) STUDY OF FOUR INDUSTRIAL SECTORS

Industrial sector	1	2	3	4
1. Parent companies in the U.S.	5	5	5	5
2. U.S. subsidiaries in Singapore.	5	5	5	5
3. Japanese subsidiaries in Singapore	5	5	5	5
4. Parent companies in Japan	5	5	5	5
<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>

Industrial sector 1 : Petrochemicals, chemicals, pharmaceuticals, food, non-metallic products.

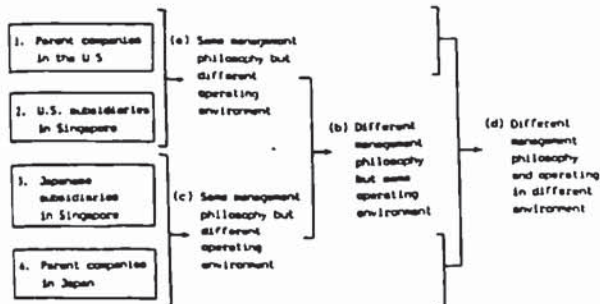
Industrial sector 2 : Precision engineering, machine tools, industrial machinery, tool and dies.

Industrial sector 3 : Shipbuilding, automotive, engineering services.

Industrial sector 4 : Electronics, Electrical.



(3) STUDY OF FOUR CONDITIONS



(a) U.S. companies in the U.S. and U.S. subsidiaries in Singapore, having the same management philosophy but operating in different environments.

(b) U.S. and Japanese subsidiaries in Singapore, having different management philosophy but operating in the same environment.

(c) Japanese companies in Japan and Japanese subsidiaries in Singapore, having the same management philosophy but operating in different environment.

(d) U.S. companies in the U.S. and Japanese companies in Japan, having different management philosophy and operating in different environment.



The usefulness of the Negandhi-Prasad model in treating management philosophy and the external conditions as independent variables is supported by this research which shows that although Japanese subsidiaries perceived that they have better management philosophy in comparison to U.S. subsidiaries, they have difficulty in adjusting to Singapore's environmental conditions. Japanese subsidiaries also perceived that they have lower management effectiveness and poorer management practices as compared to U.S. subsidiaries. Their productivity (the end-result variable) is lower than U.S. subsidiaries in all industrial sectors.

The lower productivity of Japanese subsidiaries in comparison to U.S. subsidiaries may be explained from the research model. Although Japanese subsidiaries perceived their management philosophy to be better, the difficulty in adjusting to the environmental conditions in Singapore has also adversely affected their management function/practices and management effectiveness. The poorer management effectiveness and difficulty in adjusting to Singapore's environmental conditions causes productivity which is the end-result variable to be lower than those of U.S. subsidiaries. These research findings also support the validity of the research model in viewing management practices as intervening variable; management effectiveness as dependent variable; and firm productivity as the end-result variable.

The weakness of the Farmer-Richman model is also highlighted by this research. Interview analysis shows that most Japanese managers were

aware that their management philosophy though good in comparison to U.S. management philosophy, is not suitable under certain environmental constraints in Singapore. Japanese management, however, chose to act in defiance of these constraints. For example, permanent employment, decision-making by consensus, promotion based on seniority and performance, might not be suitable for Singapore but were practised by most Japanese subsidiaries. Thus the research findings concur with Schollhammer's (1969:86) view that Farmer-Richman model may be criticized for its over-emphasizes on the necessity for environmental adaptation and the lack of attention given to the possibility that management may choose to act in defiance of certain external constraints.

#### 9.5.2 Research Design

The research design for studying the four conditions was adapted from Kelley-Worthley (1981) research design for the isolation of culture. Four groups of firms comprising of parent companies in the U.S., U.S. subsidiaries in Singapore, Japanese subsidiaries in Singapore and Japanese parent companies in Japan were further classified into four industrial sectors according to their production processes. This approach enables the data for each indicator of a specific management variable to be analysed using two-way analysis of variance (two-way ANOVA). Thus the effects of the two factors i.e. the indicator of the specific management variable and the specific industrial sector can be analysed. The research design enables the researcher to extract the maximum amount

of relevant information systematically. A more accurate analysis of questionnaire data and interview data was also possible because any variations among the four industrial sectors could be detected.

As discussed in chapter five, the research aims to survey at least a total of eighty U.S. and Japanese parent companies and their subsidiaries by questionnaires and interview at least a total of forty U.S. and Japanese subsidiaries in Singapore. Twenty eight U.S. subsidiaries and their parent companies and twenty four Japanese subsidiaries and their parent companies were approached before the researcher was able to obtain usable data for eighty companies from the four industrial sectors as targeted by the research design. However, only 10 U.S. subsidiaries and 11 Japanese subsidiaries agreed to provide data on productivity. Apart from the difficulty in obtaining the data on productivity, employees' remuneration and employment figures, most firms were willing to provide the researcher with information concerning the research topics.

The advantages of using this methodology or its adaptation for future comparative research are shown by the research results:

1. Differences among industrial sectors can be identified as shown by the following research findings:-
  - a. The analysis of questionnaire data suggests that workers from the electrical and electronics sector have better attitudes toward education for all the groups of firms (table 5C).



- b. The analysis of questionnaire data suggests that the shipbuilding, automotive, and engineering sectors have a lower tendency to provide permanent employment as compared to the other three industrial sectors for all the four groups of firms. (Questionnaire on management philosophy indicator 3, table 6C).
- c. The analysis of questionnaire data suggests that the electrical and electronics sector showed higher support for quality control circles and informal group activities (Table 6H).
2. Interaction between industrial sectors and the type of firms can be identified. For example, U.S. subsidiaries in the electrical and electronics sector and Japanese subsidiaries based in Singapore in the shipbuilding\*, automotive and engineering sector have the lowest tendency to provide permanent employment (table 6C). This is supported by findings from the interview analysis.

\*This finding was proved to be particularly accurate. In a report by Reuter (Straits Times, 1st July 1987 page 40) entitled "Japan's jobless rate highest in 34 years" it states :-

"Many firms, particularly shipbuilders, have released tens of thousands of workers because of poor sales and depressed earnings."

3. The characteristics of the type of production processes, pace of technological change, number of working shifts, productivity

and labour turnover of each industrial sector and the performance of U.S. and Japanese subsidiaries in each of these sectors can be studied through the analysis of data gathered during the interviews (chapter eight).

The literature review shows that many previous studies relating to comparative U.S. and Japanese management systems do not classify the firms studied into the different industrial sector. The above discussions show that rapid technological changes and the vastly different modes of production processes in our modern industry necessitate classification of the firms being studied into appropriate industrial sector to obtain a more detailed analysis as shown by the findings in this research.

Sirota and Greenwood (1971), Kelley and Reeser (1973), Hayashi (1978), Abernathy (1978), and Abernathy, Clark and Kantrow (1983) are good examples of studies on a specific sector/industry relating to comparative U.S. and Japanese management systems. Most other studies appeared to be in a generalized form.

Most previous studies concentrate on comparing Japanese social organization, workers, managers, management systems with those of the U.S. Examples of such studies are Abegglen (1958), Whitehill (1964), Matsuda and Morohoshi (1973-1974), Kono (1976), Yang (1977) and Pascale and Athos (1978a). However, in this study, the research design enables the researcher to study four different conditions as shown by the schematic diagram in page 312.

A possible shortcoming of the methodology is that many firms have to be studied before a conclusion regarding the different industrial sectors could be reached. The difficulty of finding firms of comparable size, age, type of products, and method of production have to be considered. The problems of English-Japanese translation and communicating with the parent U.S. and Japanese parent companies located at great distances apart need to be overcome. In spite of these shortcomings, the research model and research design used for in this research are adequate as evidenced by the research results.

Favourable feedback received from the participants during the interviews concerning effectiveness of the research model used for this study also suggested that the research model is an effective model for the comparative study of U.S.-Japanese management systems and their transferability to Singapore or another country.

#### 9.6 Significance of the Research Findings

This research focuses on the comparison of U.S. and Japanese management systems and their transferability to Singapore's manufacturing industry. The literature reviews in chapters two and three suggest that no similar research has been done to date. The dependence of Singapore's economy on U.S. and Japanese investments in the manufacturing industry enhances the importance of this research in the context of the researcher.

A limitations of this study was that most of the data obtained



were based on the perceptions of expatriate U.S. and Japanese management personnel (usually the Chief Executive) responding to the questionnaire survey and interviews. However, it should be emphasized that although the effectiveness of the U.S. and Japanese management systems in their Singaporean subsidiaries is vital to the economic well-being of Singapore, the perceptions of the U.S. and Japanese managers on the effectiveness and the transferability of their management systems to Singapore are equally important. Favourable perceptions on the effectiveness and transferability of their management systems to Singapore may encourage the existing U.S. and Japanese subsidiaries to increase their investments and also attract other companies using the similar management system to invest in Singapore. On the other hand, unfavourable perceptions can also be identified and investigations may result in remedies which may reduce or even eliminate them.

A number of recent reports and developments in Singapore suggest that the research findings are accurate :-

1. The dissatisfactions of the employers over the high operating cost caused by the annual National Wage Council Recommendations, employer's Central Provident Fund (CPF) contribution of 25% of the employee's salary, payroll tax of 2%, skill development funds contribution of 4% were noted during interviews held in 1984 and 1985. The high operating cost in Singapore caused many companies to reduce their operations in Singapore. Unemployment went up and together with the slump in the construction sector

resulted in the Singapore economy to post minus growth of 3.5% in the third quarter of 1985 (Koh, 1985). The dissatisfactions over the high operating cost in Singapore were noted by the Singapore Government and commencing 1st April 1986, the Singapore Government reduced the employer's Central Provident Fund (CPF) contribution from 25% to 10%, abolished the annual National Wage Council (NWC) recommendation and the payroll tax, and the skill development contribution was also reduced to 1%. A two-year wage freeze was also initiated and supported by the Singapore Government. All these measures were basically designed to attract more foreign investments particularly U.S. and Japanese investments into Singapore. These measures were successful and Singapore economic growth in the first quarter of 1987 was 6% and 9% was expected for the second quarter (Loh, 1987).

2. In May 1986, five U.S. subsidiaries which previously retrenched workers in 1985 announced expansion plans and started recruitment of more workers as the operating costs in Singapore became lower and therefore competitive. At least two other U.S. subsidiaries shelved plans to move to a neighbouring country where the operating cost is lower. This concurred with the research finding that it is normal for the U.S. subsidiaries to resort to retrenchment of workers in order to maintain the company's profitability.
3. In a recent seminar on "Invest-in Singapore" organized by the Keidanren (the influential Federation of Economic Organizations

in Japan and Japan's most powerful economic body) at Tokyo on 12 May 1986, the problems of job-hopping and high operating cost in Singapore were the main worries mentioned by the Japanese investors. In a speech, the Singapore Acting Trade and Industry Minister Brig-General Lee Hsien Loong assured the Japanese that the economic recession in Singapore would help to minimise the problem of job-hopping and steps have been taken to make Singapore more attractive to investors and they included a cut in the employer's contribution to the Central Provident Fund (Ong, 1986). The main reason cited by the Japanese for investing in Singapore is the political stability and investments in Singapore are relatively risk-free. The advantage of relatively risk-free investments and the problems of high operating cost and job-hopping mentioned by the Japanese investors concurred with the findings of the research.

4. The latest labour force evaluation study for countries round the world by Beri, a reputable U.S. based business consultancy, rated the Singapore Worker as No. 1 in the world (Beri, 1986). The method used by Beri was to measure workforce worldwide against four factors:

- (a) Labour Laws

Labour laws including aspects like restrictions on expatriates, rights of employees to affect decision-making and compulsory benefits and taxes; and labour organization including leftist



political influence on unions, collective bargaining, union corruption and militancy.

(b) Productivity

Both manufacturing wages and output per worker day are measured for countries worldwide by converting them into special Drawing Rights, an artificial common currency based on a basket of five major currencies. Relative productivity is measured by comparing wages and output.

(c) Work attitude

This measures working days lost because of industrial disputes and worker absenteeism.

(d) Technical skills

This measures the number of skilled and technically trained personnel compared to the market requirements.

Singapore's overall ranking as the No. 1 labour force was a result of the first two factors, labour laws/labour organization and relative productivity in which Singapore came in first on both counts. Other newly industrialized countries like Taiwan and South Korea came in second and third respectively for both these factors. Singapore was ranked sixth, however, in worker attitude behind the leader Switzerland, Japan, South Korea, Taiwan and the Netherlands in

that order. As for technical skills, Singapore was way down at the 13th position. The final Beri score : First Singapore (24 points); second Switzerland (26); third Taiwan (27); fourth Japan (28) and fifth South Korea (29)

The Beri report also concurred with the research findings. The strict labour law in Singapore and the positive attitudes of the National Trade Union Congress (NTUC) have made Singapore virtually strike-free. In fact, the NTUC and its members fully supported the pay-cut during the economic recession. Although the operating cost is high in Singapore, the productivity measured in terms of manufacturing wages and output per day is high as compared to other countries. This also concurred with the research findings since no complaint against manufacturing wages and relative productivity was recorded. Bad working attitudes were mentioned mostly by Japanese subsidiaries and not by U.S. subsidiaries and this is again substantiated by the Beri Report since Japan was placed second and Singapore was placed sixth in terms of work attitude. The other research finding that the Singaporean worker lacks technical skills is also reflected by the Beri Report where Singapore was placed in the thirteen position way behind the United States and Japan.

5. On 22nd May 1986 the Singapore Government assured investors in the manufacturing sector that they can recruit foreign workers if necessary (Wong, 1986). This concurred with the research

finding that not only the availability of trained or skilled personnel in Singapore is generally lower than those of Japan and the United States, but the availability of other workers is also generally lower than those of Japan and the United States.

6. Lee (1986:1) stated Japanese investments have slackened when American companies found the Republic an attractive place to set up factories. This substantiates the research findings that Japanese subsidiaries in Singapore experienced more difficulty in adapting to the Singaporean environment as compared to U.S. subsidiaries.

7. Lee (1986:3) after his five-day mission in Japan to promote Japanese investment in Singapore states :

"So we got questions on the national identity, on Confucianism. These are not just theoretical questions. They (the Japanese) showed a concern as to whether in Singapore we can continue to perform successfully and cohesively."

The Japanese investors' concern regarding the Singaporean's cohesiveness and Confucianism substantiates the research finding that Japanese subsidiaries in Singapore considered the Singaporean worker as individualistic.

These recent reports and developments in Singapore are evidence which suggest that the research findings are accurate. The validity of this research indicates that similar research could be useful in the development of related policies by the relevant authorities.



9.7 Application of U.S. and Japanese Management to Singapore's  
Manufacturing Industry

Singapore is a migrant society comprising of Malays, Chinese, Indians and Eurasians. The values of the ethnic Chinese, which comprise more than three-quarters of the population, are Confucian with its emphasis on collective rather than individualistic modes of expression and the importance of authority. In the earlier period, the collectivist expression centred around the extended family, clan, and dialect group. However, under the impact of last 25 years of changes, based on the internationalization of the domestic economy and the rise of English as the predominant common language, these collectivist entities have largely dissolved.

The Singapore employee is presently self-centred and too individualistic, when compared to his Asian counterparts such as Korea, Taiwan, and, in particular, Japan. This explains the difficulty in introducing Japanese management to Singapore's manufacturing industry. In fact, the Singapore Government identified one of its central political tasks as to re-establish a new collectivist Singapore consciousness around Singapore. Until the time that such a formidable task is accomplished, the Singaporean employee will remain self-centred and individualistic as compared to the Japanese. The introduction of Japanese management might be easier if the Singapore government succeeds in the task. At the present moment U.S. management system will remain more

successful than Japanese management system. As discussed previously, the unique features of Japanese management system do not appear attractive to the average Singaporean worker. In contrast, common features of U.S. management appear more attractive to the average Singaporean.

#### 9.8 Implications for the future study of comparative management

Many studies have been carried out in the field of comparative management leading to a diversity of findings on the transferability of management systems. This research examines the transferability of U.S. and Japanese management systems to Singapore's manufacturing industry. As discussed in section 3.5, this research is more involved with the unique features distinguishing U.S. and Japanese management rather than the validation of contingency theories. Hence, one of its limitations is that the research results would not be suitable for discussions on the contingency perspectives.

The three main schools of thought on the universality or transferability of management were identified in section 2.2. Yet another limitation is that the research involves only three countries and is too small a sample to examine the third school of thought which posits "clustering" of countries according to cultural traditions. However, from the examination of the research results, it is now possible to examine the first (universalism perspective) and second (culturalism perspective) schools of thought on comparative management.

Sections 9.3.3 and 9.3.4 show that the unique features of Japanese management such as lifetime employment, decision-making by consensus, infrequent and implicit performance evaluation, non-specialized career paths, paternalism, and seniority-based wage system which rely on Japanese traditional and social customs to achieve high levels of productivity encountered obvious difficulty in their implementation in Singapore. The interview analysis also shows that Japanese management is still unpopular even after adaptations were made to suit the Singaporean workforce. In contrast, U.S. management system do not face difficulty in Singapore as it does not rely on traditional values and social customs to motivate workers' productivity. Hence, U.S. subsidiaries generally use the same U.S. management system as their parent companies. This implies that culture has an influence in the transferability of management system. Alston (1986:V) in a publication particularly germane to the comparison of U.S. and Japanese management systems asserted that management cannot be separated from culture and that Japanese managers rely on traditional values and social customs to achieve high levels of workers productivity in modern industrial sectors" (Alston, 1986:V). This findings of this research therefore concur with Alston's study.

The research findings show the importance of the influence of environmental conditions on different management systems and they support the second school of thought in that the transferability of management system may face difficulty because of the diversity in



cultural environment. The extent of such difficulty may vary according to the differences in cultural environment. The foregoing discussions also confirm the importance of using an effective research design to ascertain the impact of environmental variables in comparative management studies.

#### 9.9 Implications of the research for future methodology

The limitations of research methodologies used in previous comparative studies were identified in the literature review as: lack of empirical data, uncontrolled interviews, restriction to only one or two features, failing to consider possible differences between industrial sectors, "black-box" approach, and the exclusion of effectiveness criteria in the research model. All these limitations were considered during the formulation of the research model and research design. The discussions in section 9.7 suggest that the research provides accurate and useful findings. Hence, this implies that the research methodology is adequate for this research.

A useful feature of the research design is the structured collection of empirical data using questionnaire survey which permits systematic analysis using statistical methods. For example, the classification of U.S. and Japanese companies into four industrial sectors and the design of the questionnaires enable the research data to be analysed statistically using two-way analysis of variance (two-way ANOVA). The analysis provides findings on the indicator

being investigated (i.e. teamwork) at the firm level, sectoral level, and indicates whether there are any interactions between firms and industrial sectors. Findings are then cross-checked with descriptive data collected by interviews to ensure their validity.

The research design was formulated in 1984 and two-way ANOVA was used in this study in 1985. No previous studies on comparative management have made use of such a design enabling statistical analysis to be carried out using the two-way ANOVA. It is of interest to note that Toshiro Hirota (1986) from the MIT Sloan School of Management used a similar research design to study the benefits of technology in his paper which compares the technology development of American and Japanese companies. Hirota's (1986) questionnaire uses 12 indicators to describe the benefits of technology planning and respondents from U.S. and Japanese high technology industry, general industry and mature industry were requested to circle the appropriate ratings for each indicator ranging from 1 for "low benefit" to 5 for "high benefit". The questionnaire data were then analysed using a two-way analysis of variance technique where the variance and two-way interaction could also be studied.

In summary, it can be suggested that the research model and research design formulated for this study can be adapted and improved for use in future research.

## 9.10 Suggestions for Future Research

The purpose of this research was to study the transferability of U.S. and Japanese management to Singapore's manufacturing industry. It can only provide general conclusions on the issues studied and much more detailed research projects can be undertaken. Future research are suggested in the following areas:

1. Identifying the most efficient means of applying U.S. and Japanese management systems into Singapore firms, and to develop a systematic implementation procedure.
2. Interviewing U.S. and Japanese parent companies and their workers to obtain more detailed perceptual and factual information. The perceptual data could be compared to the factual data leading to a more accurate and complete analysis.
3. Study the hybridization of U.S. and Japanese management systems and their effectiveness in Singapore.
4. In depth research into some comparable U.S. and Japanese subsidiaries and their parent companies and if possible to work and stay within these companies during the research.
5. All firms involved in this study are multinational companies. Future research on the transferability of effective features of U.S. - Japanese management systems to local corporations managed



by Singaporeans may provide useful findings.

6. As pointed out by Kelley and Worthley (1981), the field of comparative management is in an early stage of its scientific development. In depth research can also be carried into the existing methodologies for comparative management research to identify the strengths and weakness of the existing models and to develop scientific models.

#### 9.11 Commentary

The study of transferability of management system and the research model used are the two main features of this study. This section provides a final commentary on transferability and the research model based on the experience gained by researcher.

#### Research Model

In the light of the experience gained in this research, it is possible to assess the adequacy of the research model for comparative management studies and whether the causal assumptions of the model are supported by its findings. In this research the objectives were adequately fulfilled by the findings that U.S. subsidiaries in Singapore do not face difficulty in implementing U.S. management system and are significantly more productive than Japanese subsidiaries. In contrast, the unique features of Japanese management which rely on Japanese traditional and social customs to

achieve high levels of productivity encountered obvious difficulty in their implementation in Singapore. Hence, it may be suggested that the model could be used in other comparative studies provided the questionnaires and interviews are structured carefully to obtain the relevant information. For example, in comparing trading subsidiaries such as C. Itoh, Marubeni and American trading subsidiaries, management philosophy should be directed towards consumer satisfaction and the appropriate effectiveness criteria could be factors such as growth in market share, increase in sales, and return on sales instead of firm productivity.

The research model views management philosophy and the external environmental conditions as independent variables; management practices as intervening variables; management effectiveness as dependent variable; and firm productivity as the end-result variable. The validity of the model and therefore its assumption have been discussed in section 9.5.1. The major difference of the research model from Farmer-Richman (1965) model is the assumption of management philosophy as an independent variable. This assumption is supported by the research finding that Japanese subsidiaries have difficulty in adjusting to Singapore's environmental conditions although they perceived that they practised better management philosophy in comparison to U.S. subsidiaries. On the contrary, U.S. subsidiaries perceived environmental conditions in Singapore to be favourable for their companies' operation. The Farmer-Richman model assumes that system and firm efficiency, management effectiveness, and function of management process are all dependent

on the environmental conditions (external constraints). It can be argued that if environmental conditions were the determinants of management process and management effectiveness, one would expect close similarities in the management process and management effectiveness of comparable companies. Thus the model ignores the possibility that management may act in defiance of external constraints. For example, this study shows that Japanese subsidiaries perceived lifetime employment as good management philosophy and practised it in Singapore although they are aware that almost all employees would leave for higher paid jobs once the opportunity arises. This is because a substantial number of companies practise "hire and fire" policy and workers who do not leave for better jobs may lose out in the event of a recession. Hence, in this study or other similar research, the research model adapted from the Negandhi-Prasad (1971) model is more appropriate than the Richman-Farmer (1965) model. Further, the research model improves on the Negandhi-Prasad model by the addition of a research design adapted from the Kelly-Worthley (1981) research design for the isolation of culture (section 9.5.2). In conclusion, the model may be used in other similar comparative management studies provided that careful attention is paid to the structuring of questionnaire and interviews to obtain the relevant information.

### Transferability

This research examines the transferability of U.S. and Japanese management systems to the manufacturing industry in Singapore by



determining which characteristics/features of both systems are transferable. The research findings suggest that U.S. parent companies have no difficulty in transferring their management system to Singapore. On the other hand, the difficulties faced by the Japanese subsidiaries are caused by the unique features of Japanese management system (section 9.3.4). This is particularly interesting since the unique Japanese management features have been viewed by many researchers as the main reasons behind Japan's economic success (section 3.3). These features are, however, culture dependent and they rely on Japanese traditional and social customs to achieve high levels of productivity. As discussed in section 9.9, these unique Japanese management features are still unpopular even after adaptations were made to suit the Singaporean workforce. In contrast, a closer examination of the research data (questionnaire 3) suggests that U.S. and Japanese parent companies are equally successful in transferring production management techniques such as quality control (table 7B), standard settings for production workers (table 7D), standard settings for supervisory personnel (table 7E), budgeting and resource allocating (table 7F), to their subsidiaries in Singapore. Hence, the study suggests that management techniques are transferable, and management features which are culture/tradition dependent are difficult to transfer into other environment or culture.

This study was confined to the study of U.S. and Japanese multinationals and their subsidiaries in Singapore. The research findings, however, may be relevant to other multinationals which are considering to set up subsidiaries in other countries. In the case

of Singapore, its workforce can be considered as reasonably well-educated even by western standards and trained workforce are available. This contributes to the relative ease of transferring U.S. management system to Singapore. Thus, it may be suggested that so long as the management features of a multinational are not culture dependent, the transferability of its management system into another country (with reasonably well-educated and trained workforce) would probably face little difficulty. In conclusion, the extent of transferability of management may be limited by the cultural differences between the parent companies and their subsidiaries. Modifying the unpopular management features to suit the local workforce may be considered as a method of alleviating the difficulty.

TABLE 5A

## TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 1 : ENVIRONMENTAL CONDITIONS

INDICATOR 1 : GOOD ATTITUDESTOWARD PERSONS IN AUTHORITY

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 3 4 3 (18)	3 4 3 4 3 (17)	3 3 3 3 3 (15)	4 5 5 4 4 (22)	MEAN = 3.6 SD = 0.68
2	3 4 4 4 4 (19)	4 4 3 3 4 (18)	4 3 3 3 3 (16)	5 4 4 4 4 (21)	MEAN = 3.7 SD = 0.57
3	4 4 3 4 4 (19)	4 4 4 4 3 (19)	3 3 3 3 2 (14)	4 4 3 4 5 (20)	MEAN = 3.6 SD = 0.68
4	4 4 4 3 4 (19)	4 4 3 4 4 (19)	3 2 3 3 3 (14)	5 4 5 4 4 (22)	MEAN = 3.7 SD = 0.73
MEAN SD	3.75 0.44	3.65 0.49	2.95 0.39	4.25 0.55	3.65 0.66

## ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	17.2	3	5.733	59.17	2.755	4.118
INDUSTRIAL SECTORS	0.2	3	0.067	0.688	2.755	4.118
INTERACTION FIRMS & SECTORS	1.6	9	0.178	1.835	2.04	2.714
ERROR	6.2	64	0.097			



TABLE 5B

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 1 : ENVIRONMENTAL CONDITIONS

INDICATOR 2 : TENDENCY TOWARD TEAMWORK

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	3 4 2 3 3 (15)	4 3 3 3 3 (16)	2 2 3 3 2 (12)	5 5 4 4 4 (22)	MEAN = 3.25 SD = 0.91
2	2 4 3 3 3 (15)	3 4 3 3 3 (16)	3 2 2 2 3 (12)	5 4 4 4 4 (21)	MEAN = 3.2 SD = 0.83
3	3 2 2 3 4 (14)	3 4 4 3 3 (17)	3 2 2 3 2 (12)	4 4 3 4 4 (19)	MEAN = 3.1 SD = 0.79
4	4 3 2 3 4 (16)	3 4 3 3 3 (16)	3 2 3 2 2 (12)	5 5 5 4 4 (23)	MEAN = 3.35 SD = 0.99
MEAN SD	3 0.73	3.25 0.44	2.4 0.50	4.25 0.55	3.23 0.87

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	35.65	3	11.88	34.53	2.755	4.118
INDUSTRIAL SECTORS	0.65	3	0.217	0.631	2.755	4.118
INTERACTION FIRMS & SECTORS	1.65	9	0.183	0.532	2.04	2.714
ERROR	22	64	0.344			

TABLE 5C

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 1 : ENVIRONMENTAL CONDITIONS

INDICATOR 3 : IMPORTANCE OF WEALTH AND MATERIAL GAIN

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 5 5 4 4 (22)	5 4 4 5 4 (22)	5 5 4 4 5 (23)	4 5 5 4 4 (22)	MEAN = 4.45 SD = 0.51
2	5 4 4 4 4 (21)	4 4 4 4 5 (21)	4 4 5 5 4 (22)	4 4 5 4 4 (21)	MEAN = 4.25 SD = 0.44
3	5 4 5 4 4 (22)	5 4 4 4 5 (22)	4 5 5 4 5 (23)	4 5 5 4 4 (22)	MEAN = 4.45 SD = 0.51
4	4 4 4 5 5 (22)	4 4 4 5 5 (22)	4 5 4 4 5 (22)	5 5 4 4 5 (23)	MEAN = 0.45 SD = 0.51
MEAN SD	4.35 0.49	4.35 0.49	4.5 0.51	4.4 0.50	4.4 0.49

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	0.3	3	0.1	0.356	2.755	4.118
INDUSTRIAL SECTORS	0.6	3	0.2	0.711	2.755	4.118
INTERACTION FIRMS & SECTORS	1.2	9	0.13	0.356	2.04	2.714
ERROR	18	64	0.281			

TABLE 5D

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 1 : ENVIRONMENTAL CONDITIONS

INDICATOR 4 : LITERACY LEVEL OF POPULATION

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE <sup>+</sup> N = 20	JAPANESE PARENT COMPANIES <sup>§</sup> N = 20	
1	4 5 3 3 4 (19)	3 3 3 3 4 (16)	3 3 3 3 3 (15)	4 5 4 4 4 (21)	MEAN = 3.55 SD = 0.69
2	3 4 4 3 4 (18)	3 3 4 3 3 (16)	3 3 4 3 3 (16)	5 4 4 4 4 (21)	MEAN = 3.55 SD = 0.60
3	3 3 3 3 4 (16)	3 3 2 3 3 (14)	3 3 3 4 3 (16)	4 4 5 4 4 (21)	MEAN = 3.35 SD = 0.67
4	5 3 3 4 4 (19)	4 3 3 4 4 (18)	3 4 2 3 3 (15)	5 4 4 4 4 (21)	MEAN = 3.65 SD = 0.75
MEAN SD	3.6 0.68	3.2 0.52	3.1 0.45	4.2 0.41	3.53 0.67

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05*	F0.01
FIRMS	14.95	3	4.983	17.71	2.755	4.118
INDUSTRIAL SECTORS	0.95	3	0.317	1.126	2.755	4.118
INTERACTION FIRMS & SECTORS	2.05	9	0.228	0.810	2.04	2.714
ERROR	18	64	0.281			



TABLE 5E

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 1 : ENVIRONMENTAL CONDITIONS

INDICATOR 5 : AVAILABILITY OF TRAINED OR SKILLED PERSONNEL

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 4 5 5 (22)	3 3 4 4 4 (18)	3 4 4 3 3 (17)	5 5 4 4 5 (23)	MEAN = 4 SD = 0.73
2	5 4 4 4 4 (21)	4 3 4 4 3 (18)	3 3 4 4 3 (17)	4 4 5 5 4 (22)	MEAN = 3.9 SD = 0.64
3	4 4 4 5 5 (22)	4 3 3 4 4 (18)	3 3 3 4 3 (16)	5 4 5 5 4 (23)	MEAN = 3.95 SD = 0.76
4	5 5 5 4 4 (23)	3 3 3 3 3 (15)	3 3 4 3 3 (16)	5 4 5 4 5 (23)	MEAN = 3.85 SD = 0.88
MEAN SD	4.4 0.50	3.45 0.51	3.3 0.47	4.55 0.51	3.93 0.74

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	24.65	3	8.217	31.30	2.755	4.118
INDUSTRIAL SECTORS	0.25	3	0.083	0.316	2.755	4.118
INTERACTION FIRMS & SECTORS	1.85	9	0.206	0.785	2.04	2.714
ERROR	16.8	64	0.263			

TABLE 5F

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 1 : ENVIRONMENTAL CONDITIONS

INDICATOR 6 : AVAILABILITY OF OTHER WORKERS

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 5 4 4 (21)	4 4 4 4 3 (19)	4 4 4 4 3 (19)	5 4 4 4 4 (21)	MEAN = 4 SD = 0.46
2	4 4 5 4 4 (21)	4 4 4 4 3 (19)	3 4 4 4 4 (19)	4 4 4 4 5 (21)	MEAN = 4 SD = 0.46
3	4 5 4 4 4 (21)	4 4 4 4 3 (19)	4 4 3 4 4 (19)	4 4 4 4 5 (21)	* MEAN = 4 SD = 0.46
4	4 4 3 5 4 (20)	4 4 4 4 4 (20)	4 4 4 4 4 (20)	4 4 4 4 5 (21)	MEAN = 4.05 SD = 0.39
MEAN SD	4.15 0.49	3.85 0.37	3.85 0.37	4.2 0.41	4.01 0.44

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	FO.05	FO.01
FIRMS	2.14	3	0.713	3.681	2.755	4.118
INDUSTRIAL SECTORS	0.01	3	0.003	0.015	2.755	4.118
INTERACTION FIRMS & SECTORS	0.44	9	0.049	0.253	2.04	2.714
ERROR	12.4	64	0.194			

TABLE 5G

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 1 : ENVIRONMENTAL CONDITIONS

INDICATOR 7 : ATTITUDE TOWARD EDUCATION

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	3 4 4 3 3 (17)	4 4 4 4 5 (21)	4 4 4 4 4 (20)	5 5 4 4 4 (22)	MEAN = 4 SD = 0.56
2	3 3 4 4 3 (17)	5 4 4 5 4 (22)	5 4 4 4 5 (22)	5 4 5 4 5 (23)	MEAN = 4.2 SD = 0.70
3	3 3 4 3 3 (16)	4 4 4 3 4 (19)	4 4 4 4 3 (19)	4 5 5 4 4 (22)	MEAN = 3.8 SD = 0.62
4	4 3 4 3 4 (18)	4 4 5 4 5 (22)	4 4 4 5 5 (22)	5 4 4 5 5 (23)	MEAN = 4.25 SD = 0.64
MEAN SD	3.4 0.50	4.2 0.52	4.15 0.49	4.5 0.51	4.06 0.64

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	FO.05	FO.01
FIRMS	13.14	3	4.38	17.089	2.755	4.118
INDUSTRIAL SECTORS	2.54	3	0.847	3.304	2.755	4.118
INTERACTION FIRMS & SECTORS	0.61	9	0.068	0.265	2.04	2.714
ERROR	16.4	64	0.256			



TABLE 5H

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 1 : ENVIRONMENTAL CONDITIONS

INDICATOR 8 : UNION-LABOUR RELATIONSHIPS

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	3 4 4 3 4 (18)	5 4 4 4 5 (22)	4 4 4 4 4 (20)	4 4 5 4 4 (21)	MEAN = 4.05 SD = 0.51
2	4 4 4 3 3 (18)	4 4 4 4 5 (21)	5 4 4 4 4 (21)	4 4 4 4 4 (20)	MEAN = 4 SD = 0.46
3	4 4 3 4 4 (19)	4 5 4 4 4 (21)	4 4 5 4 4 (21)	4 4 5 4 4 (21)	MEAN = 4.1 SD = 0.45
4	4 4 3 3 4 (18)	5 5 4 4 4 (22)	4 4 5 4 4 (21)	4 4 4 4 4 (20)	MEAN = 4.05 SD = 0.51
MEAN SD	3.65 0.49	4.3 0.47	4.15 0.37	4.1 0.31	4.05 0.47

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	FO.05	FO.01
FIRMS	4.7	3	1.567	8.086	2.755	4.118
INDUSTRIAL SECTORS	0.1	3	0.033	0.170	2.755	4.118
INTERACTION FIRMS & SECTORS	0.6	9	0.067	0.346	2.04	2.714
ERROR	12.4	64	0.194			

TABLE 5I

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 1 : ENVIRONMENTAL CONDITIONS

INDICATOR 9 : RATE OF ANNUAL INFLATION

(1 = very high; 5 = very low)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	3 4 4 3 3 (17)	4 4 5 4 4 (21)	4 4 4 4 4 (20)	3 4 4 4 3 (18)	MEAN = 3.8 SD = 0.52
2	4 3 4 4 3 (18)	5 4 4 4 4 (21)	4 4 5 4 4 (21)	4 3 4 4 4 (19)	MEAN = 3.95 SD = 0.51
3	4 4 3 3 3 (17)	4 4 4 4 4 (20)	4 4 4 4 4 (20)	4 4 3 4 4 (19)	MEAN = 3.8 SD = 0.41
4	3 4 3 4 3 (17)	4 4 5 4 4 (21)	4 4 4 5 4 (21)	4 4 4 4 4 (20)	MEAN = 3.95 SD = 0.51
MEAN SD	3.45 0.51	4.15 0.37	4.1 0.31	3.8 0.41	3.88 0.49

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	6.25	3	2.083	11.489	2.755	4.118
INDUSTRIAL SECTORS	0.45	3	0.15	0.827	2.755	4.118
INTERACTION FIRMS & SECTORS	0.45	9	0.05	0.276	2.04	2.714
ERROR	11.6	64	0.181			

TABLE 5J

## TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 1 : ENVIRONMENTAL CONDITIONS

INDICATOR 10 : GOVERNMENTAL ATTITUDES TOWARD THE  
MANUFACTURING INDUSTRIES

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	3 4 4 3 3 (17)	4 4 5 4 4 (21)	4 4 4 4 5 (21)	5 4 4 4 5 (22)	MEAN = 4.05 SD = 0.60
2	4 4 3 4 3 (18)	4 5 4 4 4 (21)	4 4 4 4 5 (21)	4 4 5 4 5 (22)	MEAN = 4.1 SD = 0.55
3	3 4 3 4 3 (17)	4 4 4 4 4 (20)	4 3 4 4 4 (19)	4 5 4 4 4 (21)	MEAN = 3.85 SD = 0.49
4	4 4 3 4 4 (19)	5 4 4 4 4 (21)	4 4 4 4 5 (21)	5 4 4 4 5 (22)	MEAN = 4.15 SD = 0.49
MEAN SD	3.55 0.51	4.15 0.37	4.1 0.45	4.35 0.49	4.04 0.54

## ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	7.04	3	2.347	10.430	2.755	4.118
INDUSTRIAL SECTORS	1.04	3	0.347	1.542	2.755	4.118
INTERACTION FIRMS & SECTORS	0.41	9	0.046	0.204	2.04	2.714
ERROR	14.4	64	0.225			



TABLE 6A

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 2 : MANAGEMENT PHILOSOPHY

INDICATOR 1 : MANAGEMENT'S CONCERN FOR EMPLOYEE DEVELOPMENT

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	3 4 4 3 4 (18)	3 4 4 4 3 (18)	4 5 4 4 4 (21)	4 5 5 4 4 (22)	MEAN = 3.95 SD = 0.60
2	4 4 3 3 3 (17)	4 3 3 4 3 (17)	4 4 4 4 5 (21)	5 4 4 4 5 (22)	MEAN = 3.85 SD = 0.67
3	4 3 3 4 4 (18)	4 3 3 3 4 (17)	4 4 3 5 4 (20)	4 4 5 5 4 (22)	MEAN = 3.85 SD = 0.67
4	5 4 3 3 4 (19)	5 4 3 3 3 (18)	4 4 4 5 5 (22)	5 4 4 5 5 (23)	MEAN = 4.1 SD = 0.79
MEAN SD	3.6 0.60	3.5 0.61	4.2 0.52	4.45 0.51	3.94 0.68

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	12.74	3	4.247	11.921	2.755	4.118
INDUSTRIAL SECTORS	0.84	3	0.28	0.786	2.755	4.118
INTERACTION FIRMS & SECTORS	0.31	9	0.034	0.095	2.04	2.714
ERROR	22.8	64	0.356			

TABLE 6B

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 2 : MANAGEMENT PHILOSOPHY

INDICATOR 2 : EMPLOYEE'S PERCEPTION OF COMPANY'S CONCERN  
TOWARD INDIVIDUAL DEVELOPMENT

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	3 3 4 3 4 (17)	3 3 3 3 4 (16)	3 3 2 3 3 (14)	4 5 5 4 4 (22)	MEAN = 3.45 SD = 0.76
2	3 3 3 4 3 (16)	3 2 2 3 3 (13)	3 3 3 3 3 (15)	4 4 4 4 5 (21)	MEAN = 3.25 SD = 0.72
3	3 3 3 3 3 (15)	2 3 3 3 2 (13)	3 3 2 3 3 (14)	4 4 5 4 4 (21)	MEAN = 3.15 SD = 0.75
4	4 3 3 3 4 (17)	3 3 3 3 3 (15)	4 3 3 3 2 (15)	5 4 4 4 5 (22)	MEAN = 3.45 SD = 0.76
MEAN SD	3.25 0.44	2.85 0.49	2.9 0.45	4.3 0.47	3.33 0.74

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	27.25	3	9.083	41.55	2.755	4.118
INDUSTRIAL SECTORS	1.35	3	0.45	2.057	2.755	4.118
INTERACTION FIRMS & SECTORS	0.95	9	0.106	0.483	2.04	2.714
ERROR	14	64	0.219			

TABLE 6C

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 2 : MANAGEMENT PHILOSOPHY

INDICATOR 3 : DEGREE OF PERMANENT EMPLOYMENT

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	3 4 4 4 3 (18)	3 3 4 4 3 (17)	4 3 3 4 4 (18)	5 4 4 5 5 (23)	MEAN = 3.8 SD = 0.70
2	3 3 3 4 4 (17)	3 3 3 3 3 (15)	4 4 4 4 4 (20)	5 4 4 5 5 (23)	MEAN = 3.75 SD = 0.72
3	3 4 4 3 3 (17)	3 3 4 3 3 (16)	2 3 3 2 2 (12)	4 4 4 5 5 (22)	MEAN = 3.35 SD = 0.88
4	4 3 3 4 4 (18)	2 2 3 2 2 (11)	3 4 4 4 5 (20)	4 4 5 5 5 (23)	MEAN = 3.6 SD = 1.05
MEAN SD	3.5 0.51	2.95 0.60	3.5 0.83	4.55 0.51	3.63 0.85

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F <sub>0.05</sub>	F <sub>0.01</sub>
FIRMS	26.85	3	8.95	34.09	2.755	4.118
INDUSTRIAL SECTORS	2.45	3	0.817	3.11	2.755	4.118
INTERACTION FIRMS & SECTORS	10.65	9	1.183	4.508	2.04	2.714
ERROR	16.8	64	0.263			



TABLE 6D

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 2 : MANAGEMENT PHILOSOPHY

INDICATOR 4 : DECISION MAKING BY CONSENSUS

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	3 3 2 2 2 (12)	2 3 2 2 2 (11)	3 3 4 4 3 (17)	4 5 5 4 4 (22)	MEAN = 3.1 SD = 1.02
2	3 2 3 2 3 (13)	2 2 3 2 2 (11)	3 3 3 4 3 (16)	5 5 4 4 4 (22)	MEAN = 3.1 SD = 0.97
3	3 3 3 3 3 (15)	2 2 2 3 2 (11)	3 3 4 3 3 (16)	4 4 5 5 4 (22)	MEAN = 3.2 SD = 0.89
4	3 3 2 3 2 (13)	3 2 2 3 2 (12)	3 4 3 3 4 (17)	4 4 4 5 5 (22)	MEAN = 3.2 SD = 0.95
MEAN SD	2.65 0.49	2.25 0.44	3.3 0.47	4.4 0.50	3.15 0.94

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	52.9	3	17.633	70.532	2.755	4.118
INDUSTRIAL SECTORS	0.2	3	0.067	0.268	2.755	4.118
INTERACTION FIRMS & SECTORS	1.1	9	0.122	0.489	2.04	2.714
ERROR	16	64	0.25			

TABLE 6E

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 2 ; MANAGEMENT PHILOSOPHY

INDICATOR 5 ; DEGREE OF AUTONOMY GIVEN TO THE SINGAPORE COMPANY

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	N.A.	2 3 2 2 3 (12)	2 2 1 2 2 (9)	N.A.	MEAN = 2.1 SD = 0.57
2	N.A.	3 3 3 2 2 (13)	2 1 1 2 2 (8)	N.A.	MEAN = 2.1 SD = 0.74
3	N.A.	3 2 2 3 3 (13)	3 1 1 2 2 (9)	N.A.	MEAN = 2.2 SD = 0.79
4	N.A.	3 3 3 2 3 (14)	2 2 2 2 2 (10)	N.A.	MEAN = 2.4 SD = 0.52
MEAN SD		2.6 0.50	1.8 0.52		2.2 0.65

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	6.4	1	6.4	21.548	4.162	7.538
INDUSTRIAL SECTORS	0.6	3	0.2	0.673	2.914	4.490
INTERACTION FIRMS & SECTORS	0.2	4	0.05	0.168	2.681	3.999
ERROR	9.2	31	0.297			

TABLE 6F

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 2 : MANAGEMENT PHILOSOPHY

INDICATOR 6 : POLICIES INTENDED TO IMPROVE EMPLOYEE MORALE

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 5 4 4 (21)	4 4 4 4 4 (20)	4 5 4 4 3 (20)	4 5 5 4 4 (22)	MEAN = 4.15 SD = 0.49
2	5 4 4 4 5 (22)	4 4 3 4 4 (19)	4 4 4 4 5 (21)	4 4 4 5 5 (22)	MEAN = 4.2 SD = 0.52
3	5 4 4 5 4 (22)	5 3 4 4 4 (20)	4 4 4 3 4 (19)	4 4 5 4 4 (21)	MEAN = 4.1 SD = 0.55
4	5 5 4 5 4 (23)	5 4 4 5 4 (22)	5 5 4 4 4 (22)	5 5 5 4 4 (23)	MEAN = 4.5 SD = 0.51
MEAN SD	4.4 0.50	4.05 0.51	4.1 0.55	4.4 0.50	4.24 0.53

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	2.14	3	0.713	2.594	2.755	4.118
INDUSTRIAL SECTORS	1.94	3	0.647	2.352	2.755	4.118
INTERACTION FIRMS & SECTORS	0.81	9	0.09	0.327	2.04	2.714
ERROR	17.6	64	0.275			



TABLE 6G

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 2 : MANAGEMENT PHILOSOPHY

INDICATOR 7 : COMPANY-SPONSORED RECREATIONAL ACTIVITIES

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 4 4 5 (21)	4 3 4 4 4 (19)	3 4 3 3 4 (17)	4 5 4 4 4 (21)	MEAN = 3.9 SD = 0.55
2	4 4 3 4 5 (20)	3 4 3 4 4 (18)	3 4 4 3 4 (18)	4 4 4 4 4 (20)	MEAN = 3.8 SD = 0.52
3	4 4 4 4 3 (19)	3 4 4 4 3 (18)	3 4 3 3 4 (17)	4 4 3 4 4 (19)	MEAN = 3.65 SD = 0.49
4	5 5 4 4 4 (22)	4 4 3 4 4 (19)	4 3 3 4 4 (18)	5 4 4 4 5 (22)	MEAN = 4.05 SD = 0.60
MEAN SD	4.1 0.55	3.7 0.47	3.5 0.51	4.1 0.45	3.85 0.55

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	5.4	3	1.800	7.024	2.755	4.118
INDUSTRIAL SECTORS	1.7	3	0.567	2.211	2.755	4.118
INTERACTION FIRMS & SECTORS	0.7	9	0.078	0.304	2.04	2.714
ERROR	16.4	64	0.256			

TABLE 6H

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 2 : MANAGEMENT PHILOSOPHY

INDICATOR 8 : MANAGEMENT SUPPORT FOR QUALITY CONTROL  
CIRCLES OR INFORMAL GROUP ACTIVITIES

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 4 4 4 (20)	3 3 4 3 3 (16)	4 3 3 3 3 (16)	5 4 4 4 5 (22)	MEAN = 3.7 SD = 0.66
2	5 4 4 4 4 (21)	4 3 3 4 3 (17)	4 3 4 4 4 (19)	5 4 5 5 4 (23)	MEAN = 4 SD = 0.65
3	3 5 4 4 4 (20)	3 3 3 3 3 (15)	3 3 3 4 3 (16)	5 5 4 5 5 (24)	MEAN = 3.75 SD = 0.85
4	4 4 5 4 4 (21)	4 4 4 3 3 (18)	4 4 5 5 4 (22)	5 5 5 5 4 (24)	MEAN = 4.25 SD = 0.64
MEAN SD	4.1 0.45	3.3 0.47	3.65 0.67	4.65 0.49	3.93 0.73

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	20.45	3	13.851	61.56	2.755	4.118
INDUSTRIAL SECTORS	3.85	3	1.283	5.703	2.755	4.118
INTERACTION FIRMS & SECTORS	2.85	9	0.317	1.407	2.04	2.714
ERROR	14.4	64	0.225			

TABLE 6I

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 2 : MANAGEMENT PHILOSOPHY

INDICATOR 9 : SOLICITATION OF EMPLOYEE'S SUGGESTIONS

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 5 4 4 (21)	4 4 4 3 3 (18)	5 4 4 4 4 (21)	5 5 5 4 4 (23)	MEAN = 4.15 SD = 0.59
2	4 4 4 4 3 (19)	3 3 4 4 3 (17)	4 4 5 4 4 (21)	5 4 5 5 5 (24)	MEAN = 4.05 SD = 0.69
3	4 4 4 4 5 (21)	3 3 3 4 4 (17)	5 4 4 5 4 (22)	5 5 5 5 4 (24)	MEAN = 4.2 SD = 0.70
4	5 4 5 4 4 (22)	4 4 4 3 3 (18)	5 4 4 4 5 (22)	5 4 5 5 5 (24)	MEAN = 4.3 SD = 0.66
MEAN SD	4.15 0.49	3.5 0.51	4.3 0.47	4.75 0.44	4.18 0.65

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	16.05	3	5.35	21.4	2.755	4.118
INDUSTRIAL SECTORS	0.65	3	0.217	0.868	2.755	4.118
INTERACTION FIRMS & SECTORS	0.65	9	0.072	0.289	2.04	2.714
ERROR	16	64	0.25			



TABLE 6J

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 2 : MANAGEMENT PHILOSOPHY

INDICATOR 10 : BASIS ON WHICH THE FIRM GIVES PROMOTION

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	3 4 3 4 4 (18)	3 4 3 4 4 (18)	2 3 3 3 3 (14)	2 2 3 2 2 (11)	MEAN = 3.05 SD = 0.76
2	4 3 4 4 4 (19)	4 3 4 3 4 (18)	3 3 3 3 3 (15)	2 3 2 2 2 (11)	MEAN = 3.15 SD = 0.75
3	4 4 3 4 4 (19)	4 3 3 4 4 (18)	3 3 4 3 3 (16)	2 2 3 3 2 (12)	MEAN = 3.25 SD = 0.72
4	4 3 4 4 4 (19)	4 3 3 3 4 (17)	4 3 3 3 3 (16)	4 2 2 3 3 (14)	MEAN = 3.3 SD = 0.66
MEAN SD	3.75 0.44	3.55 0.51	3.05 0.39	2.4 0.60	3.19 0.71

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	21.74	3	7.247	28.28	2.755	4.118
INDUSTRIAL SECTORS	0.74	3	0.247	0.963	2.755	4.118
INTERACTION FIRMS & SECTORS	1.31	9	0.146	0.568	2.04	2.714
ERROR	16.4	64	0.256			

TABLE 7A

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 3 : MANAGEMENT FUNCTIONS/PRACTICES

INDICATOR 1 : PLANNING ORIENTATION

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	5 5 4 4 4 (22)	4 5 3 4 4 (20)	4 4 3 4 4 (19)	4 4 4 5 5 (22)	MEAN = 4.15 SD = 0.59
2	5 4 4 5 5 (23)	4 4 4 4 4 (20)	3 4 4 3 4 (18)	4 5 5 4 4 (22)	MEAN = 4.15 SD = 0.59
3	4 5 4 4 4 (21)	4 4 4 4 4 (20)	4 4 4 3 4 (19)	5 5 4 4 4 (22)	MEAN = 4.1 SD = 0.45
4	5 4 4 4 5 (22)	5 4 4 4 4 (21)	4 4 4 4 3 (19)	5 5 5 5 4 (24)	MEAN = 4.3 SD = 0.57
MEAN SD	4.4 0.50	4.05 0.39	3.75 0.44	4.5 0.51	4.18 0.55

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	7.05	3	2.35	9.874	2.755	4.118
INDUSTRIAL SECTORS	0.45	3	0.15	0.630	2.755	4.118
INTERACTION FIRMS & SECTORS	0.85	9	0.094	0.397	2.04	2.714
ERROR	15.2	64	0.238			

TABLE 7B

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 3 : MANAGEMENT FUNCTIONS/PRACTICES

INDICATOR 2 : QUALITY CONTROL

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 5 5 4 (22)	4 4 4 5 4 (21)	4 4 4 4 5 (21)	5 5 4 4 5 (23)	MEAN = 4.35 SD = 0.49
2	4 4 4 4 4 (20)	4 4 3 3 4 (18)	4 5 4 4 5 (22)	5 5 5 4 5 (24)	MEAN = 4.2 SD = 0.62
3	5 5 4 4 4 (22)	4 4 4 4 3 (19)	4 4 4 4 4 (20)	5 4 4 5 5 (23)	MEAN = 4.2 SD = 0.52
4	5 5 5 4 4 (23)	5 5 4 4 4 (22)	5 4 4 5 4 (22)	5 5 5 5 5 (25)	MEAN = 4.6 SD = 0.50
MEAN SD	4.35 0.49	4 0.56	4.25 0.44	4.75 0.44	4.34 0.55

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	5.84	3	1.947	8.890	2.755	4.118
INDUSTRIAL SECTORS	2.14	3	0.713	3.257	2.755	4.118
INTERACTION FIRMS & SECTORS	1.91	9	0.212	0.969	2.04	2.714
ERROR	14	64	0.219			



TABLE 7C

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 3 : MANAGEMENT FUNCTIONS/PRACTICES

INDICATOR 3 : EQUIPMENT MAINTENANCE

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 5 4 4 4 (21)	4 4 4 3 4 (19)	4 4 3 3 4 (18)	5 4 4 4 4 (21)	MEAN = 3.95 SD = 0.51
2	5 4 4 4 4 (21)	5 4 4 3 4 (20)	4 4 3 4 4 (19)	5 4 4 4 5 (22)	MEAN = 4.1 SD = 0.55
3	4 4 4 4 3 (19)	4 3 4 3 4 (18)	4 4 4 4 3 (19)	4 4 5 5 4 (22)	MEAN = 3.9 SD = 0.55
4	5 4 4 4 4 (21)	4 4 4 4 4 (20)	4 5 4 3 4 (20)	5 5 5 4 4 (23)	MEAN = 4.2 SD = 0.52
MEAN SD	4.1 0.45	3.85 0.49	3.8 0.52	4.4 0.50	4.04 0.54

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	4.54	3	1.513	5.709	2.755	4.118
INDUSTRIAL SECTORS	1.14	3	0.38	1.433	2.755	4.118
INTERACTION FIRMS & SECTORS	0.81	9	0.09	0.34	2.04	2.714
ERROR	16.4	64	0.265			

TABLE 7D

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 3 : MANAGEMENT FUNCTIONS/PRACTICES

INDICATOR 4 : STANDARD SETTINGS FOR PRODUCTION WORKERS  
(1= NOT DONE; 5=SYSTEMATICALLY DONE)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 4 4 5 (21)	4 4 4 4 5 (21)	4 4 5 4 4 (21)	4 4 4 4 4 (20)	MEAN = 4.15 SD = 0.37
2	5 4 5 5 4 (23)	4 4 4 5 4 (21)	4 3 4 4 4 (19)	4 4 4 4 4 (20)	MEAN = 4.15 SD = 0.49
3	4 4 4 4 5 (21)	4 4 4 3 4 (19)	4 4 4 3 4 (19)	4 4 5 4 4 (21)	MEAN = 4 SD = 0.46
4	5 4 5 5 5 (24)	5 4 4 4 4 (21)	4 4 4 4 3 (19)	4 4 5 4 4 (21)	MEAN = 4.25 SD = 0.55
MEAN SD	4.45 0.51	4.1 0.45	3.9 0.45	4.1 0.31	4.14 0.47

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	3.14	3	1.047	5.48	2.755	4.118
INDUSTRIAL SECTORS	0.64	3	0.213	1.117	2.755	4.118
INTERACTION FIRMS & SECTORS	2.11	9	0.234	1.227	2.04	2.714
ERROR	12.2	64	0.191			

TABLE 7E

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 3 : MANAGEMENT FUNCTIONS/PRACTICES

INDICATOR 5 : STANDARD SETTINGS FOR SUPERVISORY PERSONNEL  
(1=NOT DONE; 5=SYSTEMATICALLY DONE)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 4 4 5 (21)	4 4 3 4 4 (19)	4 4 4 3 4 (19)	4 4 4 4 5 (21)	MEAN = 4 SD = 0.46
2	5 4 4 4 4 (21)	4 4 4 3 4 (19)	4 4 3 4 4 (19)	4 4 4 4 5 (21)	MEAN = 4 SD = 0.46
3	4 4 3 4 4 (19)	4 4 3 3 4 (18)	4 4 4 4 3 (19)	4 4 5 4 4 (21)	MEAN = 3.85 SD = 0.49
4	4 4 5 4 4 (21)	4 4 5 3 4 (20)	4 4 4 4 3 (19)	4 4 4 5 4 (21)	MEAN = 4.05 SD = 0.51
MEAN SD	4.1 0.45	3.8 0.52	3.8 0.41	4.2 0.41	3.98 0.48

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	2.55	3	0.85	3.778	2.755	4.118
INDUSTRIAL SECTORS	0.45	3	0.15	0.667	2.755	4.118
INTERACTION FIRMS & SECTORS	0.55	9	0.061	0.272	2.04	2.714
ERROR	14.4	64	0.225			



TABLE 7F

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 3 : MANAGEMENT FUNCTIONS/PRACTICES

INDICATOR 6 : BUDGETING AND RESOURCE ALLOCATING

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 4 4 5 (21)	4 4 3 4 4 (19)	4 4 5 3 3 (19)	4 4 5 4 4 (21)	MEAN = 4 SD = 0.56
2	4 5 4 4 4 (21)	4 4 3 4 4 (19)	4 3 4 4 4 (19)	5 4 4 4 5 (22)	MEAN = 4.05 SD = 0.51
3	4 4 3 5 5 (21)	4 4 3 4 4 (19)	4 3 5 4 4 (20)	5 4 5 4 4 (22)	MEAN = 4.1 SD = 0.64
4	5 4 4 4 5 (22)	4 3 4 4 4 (19)	4 3 4 5 4 (20)	5 4 5 5 4 (23)	MEAN = 4.2 SD = 0.62
MEAN SD	4.25 0.55	3.8 0.41	3.9 0.64	4.4 0.50	4.09 0.58

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	4.84	3	1.613	5.13	2.755	4.118
INDUSTRIAL SECTORS	0.44	3	0.147	0.467	2.755	4.118
INTERACTION FIRMS & SECTORS	0.31	9	0.034	0.11	2.04	2.714
ERROR	20.08	64	0.314			

TABLE 7G

## TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 3 : MANAGEMENT FUNCTIONS/PRACTICES

INDICATOR 7 : MANAGERS' PERCEPTION OF SUBORDINATES  
(1=NOT CONFIDENT; 5=CONFIDENT)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 4 4 5 (21)	3 3 2 3 3 (14)	3 3 2 3 3 (14)	5 5 4 4 4 (22)	MEAN = 3.55 SD = 0.89
2	4 4 4 4 4 (20)	4 3 3 3 3 (16)	3 3 3 3 2 (14)	4 4 5 4 4 (21)	MEAN = 3.55 SD = 0.69
3	4 4 3 4 5 (20)	3 3 3 2 3 (14)	3 3 3 3 3 (15)	4 4 5 4 4 (21)	MEAN = 3.5 SD = 0.76
4	5 5 3 4 4 (21)	3 3 3 3 2 (14)	4 3 3 3 4 (17)	5 4 4 5 5 (23)	MEAN = 3.75 SD = 0.91
MEAN SD	4.1 0.55	2.9 0.45	3 0.46	4.35 0.49	3.59 0.81

## ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	33.24	3	11.08	45.41	2.755	4.118
INDUSTRIAL SECTORS	0.74	3	0.247	1.011	2.755	4.118
INTERACTION FIRMS & SECTORS	1.81	9	0.201	0.824	2.04	2.714
ERROR	15.6	64	0.244			

TABLE 7H

## TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 3 : MANAGEMENT FUNCTIONS/PRACTICES

INDICATOR 8 : DIFFICULTY OF MANAGING THE SUBSIDIARY IN SINGAPORE  
(1=VERY DIFFICULT; 5=NOT DIFFICULT)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	N.A.	4 4 4 5 4 (21)	4 4 3 4 4 (19)	N.A.	MEAN = 4 SD = 0.47
2	N.A.	4 4 4 4 4 (20)	4 4 3 4 3 (18)	N.A.	MEAN = 3.8 SD = 0.42
3	N.A.	4 4 3 4 4 (19)	4 4 3 3 4 (18)	N.A.	MEAN = 3.7 SD = 0.48
4	N.A.	5 4 4 5 4 (22)	3 4 4 4 3 (18)	N.A.	MEAN = 4 SD = 0.67
MEAN SD		4.1 0.45	3.65 0.49		3.88 0.52

## ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	2.02	1	2.02	8.707	4.162	7.538
INDUSTRIAL SECTORS	0.67	3	0.223	0.963	2.914	4.490
INTERACTION FIRMS & SECTORS	0.48	4	0.12	0.517	2.681	3.999
ERROR	7.2	31	0.232			



TABLE 7I

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 3 : MANAGEMENT FUNCTIONS/PRACTICES

INDICATOR 9 : ACTIONS TAKEN TO IMPROVE EFFICIENCY

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	5 4 4 5 5 (23)	4 4 4 4 5 (21)	3 3 4 4 3 (17)	4 4 5 5 4 (22)	MEAN = 4.15 SD = 0.67
2	5 4 5 5 4 (23)	5 4 4 4 4 (21)	3 3 3 3 4 (16)	5 5 4 4 4 (22)	MEAN = 4.1 SD = 0.72
3	4 4 4 5 5 (22)	4 4 4 5 4 (21)	4 3 3 3 4 (17)	5 4 4 4 5 (22)	MEAN = 4.1 SD = 0.64
4	5 5 5 4 4 (23)	5 5 4 4 4 (22)	3 4 3 3 4 (17)	5 4 5 4 5 (23)	MEAN = 4.25 SD = 0.72
MEAN SD	4.55 0.51	4.25 0.44	3.35 0.49	4.45 0.51	4.15 0.68

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	18	3	6	21.818	2.755	4.118
INDUSTRIAL SECTORS	0.3	3	0.1	0.364	2.755	4.118
INTERACTION FIRMS & SECTORS	0.3	9	0.033	0.121	2.04	2.714
ERROR	17.6	64	0.275			

TABLE 7J

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 3 : MANAGEMENT FUNCTIONS/PRACTICES

INDICATOR 10 : COORDINATION OF MANUFACTURING ACTIVITIES

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	5 5 4 4 4 (22)	4 5 4 4 4 (21)	4 4 3 4 3 (18)	5 5 5 5 4 (24)	MEAN = 4.25 SD = 0.64
2	5 4 5 4 4 (22)	4 4 4 4 3 (19)	3 4 3 3 4 (17)	4 5 5 4 5 (23)	MEAN = 4.05 SD = 0.69
3	4 4 5 5 4 (22)	4 4 4 5 3 (20)	4 3 4 3 4 (18)	5 4 5 4 4 (22)	MEAN = 4.1 SD = 0.64
4	5 4 4 5 5 (23)	4 3 4 5 5 (21)	3 4 4 4 3 (18)	5 5 5 5 4 (24)	MEAN = 4.3 SD = 0.73
MEAN SD	4.45 0.51	4.05 0.61	3.55 0.51	4.65 0.49	4.18 0.67

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	14.15	3	4.717	15.069	2.755	4.118
INDUSTRIAL SECTORS	0.85	3	0.283	0.905	2.755	4.118
INTERACTION FIRMS & SECTORS	0.55	9	0.061	0.195	2.04	2.714
ERROR	20	64	0.313			

TABLE 8A

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 4 : MANAGEMENT EFFECTIVENESS

INDICATOR 1 : MANAGEMENT ABILITY TO ATTRACT AND RETAIN  
HIGH-LEVEL MANPOWER

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	5 4 5 4 4 (22)	4 4 5 4 4 (21)	3 3 3 4 3 (16)	5 4 5 5 4 (23)	MEAN = 4.1 SD = 0.72
2	4 4 5 4 4 (21)	4 4 5 4 5 (22)	4 3 3 2 3 (15)	5 4 4 5 5 (23)	MEAN = 4.05 SD = 0.83
3	4 4 5 5 4 (22)	4 4 5 5 4 (22)	3 3 3 3 4 (16)	5 4 4 4 5 (22)	MEAN = 4.1 SD = 0.72
4	5 4 4 4 4 (21)	5 4 4 5 5 (23)	4 3 3 3 3 (16)	5 5 5 5 4 (24)	MEAN = 4.2 SD = 0.77
MEAN SD	4.3 0.47	4.4 0.50	3.15 0.49	4.6 0.50	4.11 0.75

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	25.64	3	8.547	31.773	2.755	4.118
INDUSTRIAL SECTORS	0.24	3	0.08	0.297	2.755	4.118
INTERACTION FIRMS & SECTORS	0.91	9	0.101	0.376	2.04	2.714
ERROR	17.2	64	0.269			



TABLE 8B

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 4 : MANAGEMENT EFFECTIVENESS

INDICATOR 2 : EMPLOYEE MORALE AND SATISFACTION IN WORK

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	5 4 4 5 4 (22)	4 5 4 4 3 (20)	3 3 4 3 3 (16)	5 5 5 4 4 (23)	MEAN = 4.05 SD = 0.76
2	5 4 5 4 4 (22)	4 4 5 4 4 (21)	4 3 3 2 3 (15)	4 5 5 4 5 (23)	MEAN = 4.05 SD = 0.82
3	4 5 5 4 4 (22)	4 4 4 3 4 (19)	3 3 3 3 4 (16)	4 5 5 5 4 (23)	MEAN = 4 SD = 0.73
4	5 4 4 5 5 (23)	4 3 4 4 5 (20)	4 2 4 3 3 (16)	5 5 4 5 4 (23)	MEAN = 4.1 SD = 0.85
MEAN SD	4.45 0.51	4 0.56	3.15 0.59	4.6 0.50	4.05 0.78

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	25.5	3	8.5	25.148	2.755	4.118
INDUSTRIAL SECTORS	0.1	3	0.03	0.099	2.755	4.118
INTERACTION FIRMS & SECTORS	0.6	9	0.067	0.197	2.04	2.714
ERROR	21.6	64	0.338			

TABLE 8C

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 4 : MANAGEMENT EFFECTIVENESS

INDICATOR 3 : EMPLOYEE TURNOVER AND ABSENTEEISM  
(1=VERY HIGH; 5=VERY LOW)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 4 4 4 (20)	3 3 3 3 4 (16)	2 2 2 3 3 (12)	5 5 5 5 4 (24)	MEAN = 3.6 SD = 1.0
2	4 4 3 4 4 (19)	3 4 2 3 3 (15)	3 3 3 2 2 (13)	5 5 5 5 5 (25)	MEAN = 3.6 SD = 1.05
3	4 4 4 3 4 (19)	3 3 3 3 2 (14)	3 3 1 2 3 (12)	5 5 5 4 5 (24)	MEAN = 3.45 SD = 1.10
4	5 4 4 4 4 (21)	3 3 4 3 3 (16)	3 2 2 3 3 (13)	5 5 5 5 5 (25)	MEAN = 3.75 SD = 1.02
MEAN SD	3.95 0.39	3.05 0.51	2.5 0.61	4.9 0.31	3.6 1.03

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	66.5	3	22.167	93.137	2.755	4.118
INDUSTRIAL SECTORS	0.9	3	0.3	1.261	2.755	4.118
INTERACTION FIRMS & SECTORS	0.6	9	0.067	0.280	2.04	2.714
ERROR	15.2	64	0.238			

TABLE 8D

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 4 : MANAGEMENT EFFECTIVENESS

INDICATOR 4 : INTERPERSONAL RELATIONSHIPS IN ORGANIZATIONAL SETTINGS

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 3 4 4 4 (19)	3 3 4 3 4 (17)	4 4 4 3 3 (18)	4 4 5 5 5 (23)	MEAN = 3.85 SD = 0.67
2	4 3 3 3 4 (17)	3 3 3 3 3 (15)	4 4 4 4 3 (19)	5 5 5 5 4 (24)	MEAN = 3.75 SD = 0.79
3	4 3 4 5 3 (19)	3 3 3 4 3 (16)	3 4 4 4 3 (18)	5 5 4 5 5 (24)	MEAN = 3.85 SD = 0.81
4	4 4 4 5 4 (21)	3 3 3 3 4 (16)	4 4 3 3 4 (18)	5 5 5 5 5 (25)	MEAN = 4 SD = 0.80
MEAN SD	3.8 0.62	3.2 0.41	3.65 0.49	4.8 0.41	3.86 0.76

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	27.34	3	9.113	37.35	2.755	4.118
INDUSTRIAL SECTORS	0.99	3	0.33	1.352	2.755	4.118
INTERACTION FIRMS & SECTORS	1.56	9	0.173	0.710	2.04	2.714
ERROR	15.6	64	0.244			



TABLE 8F

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 4 : MANAGEMENT EFFECTIVENESS

INDICATOR 5 : DEPARTMENTAL RELATIONSHIPS

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 4 5 4 (21)	3 3 4 4 3 (17)	4 4 3 4 4 (19)	5 5 5 5 4 (24)	MEAN = 4.05 SD = 0.69
2	4 5 3 4 4 (20)	3 3 3 4 3 (16)	4 4 4 4 4 (20)	5 5 4 5 5 (24)	MEAN = 4 SD = 0.73
3	5 3 4 4 4 (20)	4 3 4 4 4 (19)	4 4 3 4 4 (19)	5 5 4 4 5 (23)	MEAN = 4.05 SD = 0.61
4	5 5 4 4 4 (22)	5 4 4 4 3 (20)	5 4 4 4 5 (22)	5 5 5 4 5 (24)	MEAN = 4.4 SD = 0.60
MEAN SD	4.15 0.59	3.6 0.60	4 0.46	4.75 0.44	4.13 0.66

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	13.65	3	4.55	17.105	2.755	4.118
INDUSTRIAL SECTORS	2.05	3	0.677	2.544	2.755	4.118
INTERACTION FIRMS & SECTORS	1.85	9	0.206	0.773	2.04	2.714
ERROR	17	64	0.266			

TABLE 8F

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 4 : MANAGEMENT EFFECTIVENESS

INDICATOR 6 : THE EXECUTIVE'S PERCEPTION OF THE FIRM'S OVERALL OBJECTIVES  
 (1=DEPARTMENTAL OBJECTIVE IS MOST IMPORTANT)  
 (5=COMPANY'S OBJECTIVE IS MOST IMPORTANT)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 3 3 4 4 (18)	4 3 3 4 3 (17)	3 4 4 3 3 (17)	4 5 5 5 4 (23)	MEAN = 3.75 SD = 0.72
2	4 4 3 4 4 (19)	3 3 4 3 4 (17)	3 4 4 4 3 (18)	5 4 5 5 4 (23)	MEAN = 3.85 SD = 0.67
3	4 4 4 5 3 (20)	4 4 3 4 3 (18)	3 3 4 3 3 (16)	5 4 4 4 4 (21)	MEAN = 3.75 SD = 0.64
4	5 4 4 4 3 (20)	4 3 4 3 3 (17)	4 3 4 3 3 (17)	5 5 5 4 5 (24)	MEAN = 3.9 SD = 0.79
MEAN SD	3.85 0.59	3.45 0.51	3.4 0.50	4.55 0.51	3.81 0.70

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	16.94	3	5.647	18.822	2.755	4.118
INDUSTRIAL SECTORS	0.34	3	0.113	0.378	2.755	4.118
INTERACTION FIRMS & SECTORS	1.71	9	0.19	0.633	2.04	2.714
ERROR	19.2	64	0.3			

TABLE 8G

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 4 : MANAGEMENT EFFECTIVENESS

INDICATOR 7 : UTILIZATION OF HIGH-LEVEL MANPOWER

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	5 5 4 4 4 (22)	4 5 4 4 4 (21)	4 4 3 3 4 (18)	4 5 4 5 5 (23)	MEAN = 4.2 SD = 0.62
2	4 4 5 5 5 (23)	4 4 5 5 4 (22)	4 3 3 4 4 (18)	5 4 5 4 4 (22)	MEAN = 4.25 SD = 0.64
3	4 5 5 4 5 (23)	4 5 5 4 4 (22)	3 3 3 5 4 (18)	4 4 5 5 5 (23)	MEAN = 4.3 SD = 0.73
4	5 5 5 5 4 (24)	5 5 5 4 4 (23)	3 4 4 5 5 (21)	5 5 4 5 5 (24)	MEAN = 4.6 SD = 0.60
MEAN SD	4.6 0.50	4.4 0.50	3.75 0.72	4.6 0.50	4.34 0.66

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	9.74	3	3.247	9.606	2.755	4.118
INDUSTRIAL SECTORS	1.94	3	0.647	1.913	2.755	4.118
INTERACTION FIRMS & SECTORS	0.61	9	0.068	0.2	2.04	2.714
ERROR	21.6	64	0.338			



TABLE 8H

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 4 : MANAGEMENT EFFECTIVENESS

INDICATOR 8 : ORGANIZATIONAL EFFECTIVENESS IN ADAPTING TO  
SINGAPORE ENVIRONMENT  
(1=MUCH DIFFICULTY; 5=WITHOUT MUCH DIFFICULTY)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	N.A.	4 4 5 4 4 (21)	3 4 4 3 3 (17)	N.A.	MEAN = 3.8 SD = 0.63
2	N.A.	5 4 4 4 4 (21)	3 3 3 4 3 (16)	N.A.	MEAN = 3.7 SD = 0.68
3	N.A.	5 4 4 4 4 (21)	3 3 2 4 3 (15)	N.A.	MEAN = 3.6 SD = 0.84
4	N.A.	5 4 4 4 5 (22)	3 3 4 3 4 (17)	N.A.	MEAN = 3.9 SD = 0.74
MEAN SD		4.25 0.44	3.25 0.55		3.75 0.71

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	10	1	10	35.211	4.162	7.538
INDUSTRIAL SECTORS	0.5	3	0.167	0.587	2.914	4.490
INTERACTION FIRMS & SECTORS	0.2	4	0.05	0.176	2.681	3.999
ERROR	8.8	31	0.284			

TABLE 81

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 4 : MANAGEMENT EFFECTIVENESS

INDICATOR 9 : ATTITUDE OF SINGAPOREAN WORKERS TOWARD  
EXPATRIATE MANAGERS

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	N.A.	4 4 5 4 4 (21)	3 3 3 3 4 (16)	N.A.	MEAN = 3.7 SD = 0.68
2	N.A.	5 4 4 4 4 (21)	3 3 3 3 3 (15)	N.A.	MEAN = 3.6 SD = 0.70
3	N.A.	4 4 5 4 4 (21)	3 3 3 4 3 (16)	N.A.	MEAN = 3.7 SD = 0.68
4	N.A.	5 4 5 4 4 (22)	3 3 4 3 3 (16)	N.A.	MEAN = 3.8 SD = 0.79
MEAN SD		4.25 0.44	3.15 0.37		3.7 0.69

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	12.1	1	12.1	62.4	4.162	7.538
INDUSTRIAL SECTORS	0.2	3	0.067	0.344	2.914	4.490
INTERACTION FIRMS & SECTORS	0.1	4	0.025	0.129	2.681	3.999
ERROR	6	31	0.194			

TABLE 8J

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 4 : MANAGEMENT EFFECTIVENESS

INDICATOR 10 : EFFICIENCY OF SUBSIDIARY/PARENT PLANT

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	5 4 4 4 5 (22)	5 5 4 4 4 (22)	4 4 3 3 3 (17)	5 5 5 5 4 (24)	MEAN = 4.25 SD = 0.72
2	4 4 5 5 4 (22)	4 5 5 4 4 (22)	3 3 3 4 3 (16)	5 5 4 5 4 (23)	MEAN = 4.15 SD = 0.75
3	4 4 4 5 5 (22)	3 4 4 4 5 (20)	3 4 3 3 2 (15)	5 5 4 5 5 (24)	MEAN = 4.05 SD = 0.89
4	5 4 4 4 4 (21)	5 5 4 4 5 (23)	4 3 3 3 3 (16)	5 5 5 5 4 (24)	MEAN = 4.2 SD = 0.77
MEAN SD	4.35 0.49	4.35 0.59	3.2 0.52	4.75 0.44	4.16 0.77

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	FO.05	FO.01
FIRMS	26.84	3	8.947	31.065	2.755	4.118
INDUSTRIAL SECTORS	0.44	3	0.147	0.509	2.755	4.118
INTERACTION FIRMS & SECTORS	1.21	9	0.134	0.467	2.04	2.714
ERROR	18.4	64	0.288			



TABLE 9A

## TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 1 : ENVIRONMENTAL CONDITIONS

INDICATOR I : OVERALL OPINION

(1 = very poor; 10 = excellent)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	7 8 6 8 7 (36)	8 7 8 8 8 (39)	7 6 7 7 7 (34)	8 9 8 9 8 (42)	MEAN = 7.55 SD = 0.83
2	8 8 7 7 6 (36)	7 8 8 8 9 (40)	6 7 6 7 7 (33)	7 9 8 8 9 (41)	MEAN = 7.5 SD = 0.95
3	8 7 7 6 8 (36)	7 8 8 8 9 (40)	6 7 7 7 7 (34)	8 8 7 9 9 (41)	MEAN = 7.55 SD = 0.89
4	7 8 8 7 7 (37)	8 9 8 8 8 (41)	7 7 7 6 7 (34)	9 9 9 8 8 (43)	MEAN = 7.75 SD = 0.85
MEAN SD	7.25 0.72	8.0 0.56	6.75 0.44	8.35 0.67	7.59 0.87

## ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	31.35	3	10.45	24.94	2.755	4.118
INDUSTRIAL SECTORS	0.75	3	0.25	0.60	2.755	4.118
INTERACTION FIRMS & SECTORS	0.5	9	0.056	0.13	2.04	2.714
ERROR	26.8	64	0.419			

TABLE 9B

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 2 : MANAGEMENT PHILOSOPHY

INDICATOR II : OVERALL OPINION

(1 = very poor; 10 = excellent)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	7 7 8 7 7 (36)	6 6 6 6 7 (31)	7 8 7 7 8 (37)	8 9 8 9 9 (43)	MEAN = 7.35 SD = 0.99
2	8 7 7 7 8 (37)	7 7 7 6 6 (33)	8 7 8 7 7 (37)	9 9 8 9 8 (43)	MEAN = 7.5 SD = 0.89
3	8 7 8 7 7 (37)	7 7 7 6 7 (34)	7 6 6 7 7 (33)	9 8 8 8 9 (42)	MEAN = 7.3 SD = 0.86
4	6 7 8 8 8 (37)	5 6 6 7 7 (31)	7 8 7 7 8 (37)	9 8 9 8 9 (43)	MEAN = 7.4 SD = 1.1
MEAN SD	7.35 0.59	6.45 0.60	7.2 0.62	8.55 0.51	7.39 0.95

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	45.34	3	15.11	44.71	2.755	4.118
INDUSTRIAL SECTORS	0.44	3	0.147	0.43	2.755	4.118
INTERACTION FIRMS & SECTORS	3.61	9	0.401	1.19	2.04	2.714
ERROR	21.6	64	0.338			

TABLE 9C

TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 3 : MANAGEMENT FUNCTIONS/PRACTICES

INDICATOR III : OVERALL OPINION

(1 = very poor; 10 = excellent)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	8 8 7 7 9 (39)	7 6 7 8 7 (35)	8 7 7 7 6 (35)	9 8 9 9 9 (44)	MEAN = 7.65 SD = 0.99
2	8 7 8 7 9 (39)	8 6 8 7 7 (36)	7 6 8 7 7 (35)	9 7 9 9 8 (42)	MEAN = 7.6 SD = 0.94
3	8 7 8 8 8 (39)	7 7 7 6 8 (35)	7 7 6 7 7 (34)	9 8 8 8 9 (42)	MEAN = 7.5 SD = 0.83
4	9 8 8 8 8 (41)	7 7 7 8 7 (36)	7 7 8 6 7 (35)	9 9 9 9 8 (44)	MEAN = 7.8 SD = 0.89
MEAN SD	7.9 0.64	7.1 0.64	6.95 0.60	8.6 0.60	7.64 0.90

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	35.14	3	11.713	27.18	2.755	4.118
INDUSTRIAL SECTORS	0.94	3	0.313	0.73	2.755	4.118
INTERACTION FIRMS & SECTORS	0.81	9	0.09	0.21	2.04	2.714
ERROR	27.6	64	0.431			



TABLE 9D

## TWO-WAY ANALYSIS OF VARIANCE

QUESTIONNAIRE 4 : MANAGEMENT EFFECTIVENESS

INDICATOR IV : OVERALL OPINION

(1 = very poor; 10 = excellent)

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	8 8 7 8 9 (40)	7 7 7 8 6 (35)	6 7 6 6 6 (31)	8 9 9 9 8 (43)	MEAN = 7.45 SD = 1.1
2	8 8 7 8 8 (39)	7 6 8 7 7 (35)	6 7 5 7 6 (31)	8 9 8 9 9 (43)	MEAN = 7.4 SD = 1.1
3	8 8 9 8 7 (40)	7 8 7 7 5 (34)	6 6 5 6 7 (30)	9 9 9 8 8 (43)	MEAN = 7.35 SD = 1.26
4	8 9 9 8 9 (43)	8 7 7 7 7 (36)	6 7 6 6 5 (30)	9 9 8 9 9 (44)	MEAN = 7.65 SD = 1.26
MEAN SD	8.1 0.64	7.0 0.73	6.1 0.64	8.65 0.49	7.46 1.17

## ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	77.74	3	25.913	60.123	2.755	4.118
INDUSTRIAL SECTORS	1.04	3	0.347	0.804	2.755	4.118
INTERACTION FIRMS & SECTORS	1.51	9	0.168	0.389	2.04	2.714
ERROR	27.6	64	0.431			

A P P E N D I X 1

Questionnaire 1: Environmental Conditions

Please circle a number of each indicator below which most closely describes your opinion.

<u>Indicators</u>	<u>Least</u> <u>(or poor)</u>					<u>Most</u> <u>(or good)</u>				
1. Good attitudes toward persons in authority	1	2	3	4	5					
2. Tendency toward teamwork	1	2	3	4	5					
3. Importance of wealth and material gain	1	2	3	4	5					
4. Employment situation	1	2	3	4	5					
5. Literacy level of population	1	2	3	4	5					
6. Availability of trained or skilled personnel	1	2	3	4	5					
7. Attitude, toward education	1	2	3	4	5					
8. Union-labour relationships	1	2	3	4	5					
9. Rate of annual inflation (5=very high; 1=very low)	1	2	3	4	5					
10. Governmental attitudes toward workers and business community	1	2	3	4	5					

I. Please give your opinion on the overall assessment on environmental conditions of your company.

Very poor

Excellent

1    2    3    4    5    6    7    8    9    10



Questionnaire 2: Management Philosophy

Please circle a number for each indicator below which most closely describes your opinion.

<u>Indicators</u>	<u>No Concern</u>					<u>Very Concern</u>														
1. Management's policy toward employee development	1	2	3	4	5															
2. Employee's perception of company's concern toward individual development	1	2	3	4	5															
						<u>Least (or poor)</u>					<u>Most (or good)</u>									
3. Degree of permanent employment	1	2	3	4	5															
4. Decision-making by consensus	1	2	3	4	5															
5. Percent of company stock own by the parent company	1	2	3	4	5															
6. Motivation to improve employee morale	1	2	3	4	5															
7. Company-sponsored recreational activities	1	2	3	4	5															
8. Management support for quality control circles or informal group activities	1	2	3	4	5															
9. Solicitation of employee's suggestions	1	2	3	4	5															
						<u>Seniority alone</u>					<u>Seniority and perfor- mance</u>					<u>Perfor- mance alone</u>				
10. Basis on which the firm gives promotion	1	2	3	4	5															
II. Please give your opinion on the overall assessment on management philosophy of your company.																				
<u>Very poor</u>					<u>Excellent</u>															
1	2	3	4	5	6	7	8	9	10											

Questionnaire 3: Management Functions/Practices

Please circle a number of each indicator below which most closely describes your opinion.

<u>Indicators</u>	<u>Least</u> (or poor)			<u>Most</u> (or good)	
1. Planning orientation	1	2	3	4	5
2. Quality control	1	2	3	4	5
3. Equipment maintenance	1	2	3	4	5
4. Standard settings for production workers (1=Not done; 5=Systematically done)	1	2	3	4	5
5. Standard setting for supervisory personnel (1=Not done; 5=Systematically done)	1	2	3	4	5
6. Budgeting and resource allocating	1	2	3	4	5
7. Managers' perception of subordinates (1=Not confident; 5=Confident)	1	2	3	4	5
8. Difficulty of managing subsidiary in Singapore. (1=very difficult; 5=Not difficult)	1	2	3	4	5
9. Actions taken to improve efficiency	1	2	3	4	5
10. Coordination of manufacturing activities	1	2	3	4	5

III. Please give your opinion on the overall assessment on management functions/practices of your company.

Very poor

Excellent

1    2    3    4    5    6    7    8    9    10

Questionnaire 4: Management Effectiveness

Please circle a number of each indicator below which most closely describes your opinion.

<u>Indicators</u>	<u>Least</u> <u>(or poor)</u>					<u>Most</u> <u>(or good)</u>				
1. Management ability to attract and retain high-level manpower	1	2	3	4	5					
2. Employees' morale and satisfaction in work	1	2	3	4	5					
3. Employee turnover and absenteeism. (1=very high; 5=very low)	1	2	3	4	5					
4. Interpersonal relationships in organizational settings	1	2	3	4	5					
5. Departmental relationships	1	2	3	4	5					
6. The executive's perception of the firm's overall objectives. (1=Departmental objective is most important) (5=Company's objective is most important)	1	2	3	4	5					
7. Utilization of high-level manpower	1	2	3	4	5					
8. Organizational effectiveness in adapting to Singapore environment. (1=Much difficulty; 5=Without much difficulty)	1	2	3	4	5					
9. Impression of Singaporean workers toward expatriate managers	1	2	3	4	5					
10. Efficiency of subsidiary/parent plant	1	2	3	4	5					
IV. Please give your opinion on the overall assessment on management effectiveness of your company.										

Very poorExcellent

1    2    3    4    5    6    7    8    9    10



Questionnaire 1: Environmental Conditions

アンケート1: 職場環境について

Please circle a number of each indicator below which most closely describes your opinion.  
 下記の各項目についてあなたの意見に一番近いものの番号を○で囲んでください。

Indicators 項目	Least (or poor) 少ない(又は劣っている) →					Most (or good) 多い(又はすぐれている)				
	1	2	3	4	5	1	2	3	4	5
1. Good attitudes toward person in authority 上司に対する態度	1	2	3	4	5					
2. Tendency toward teamwork チームワークを重視する傾向	1	2	3	4	5					
3. Importance of wealth and material gain 財物を重視する態度	1	2	3	4	5					
4. Employment situation 雇用される機会	1	2	3	4	5					
5. Literacy level of population 識字率の程度	1	2	3	4	5					
6. Availability of trained or skilled personnel 訓練された人材獲得の可能性	1	2	3	4	5					
7. Attitude toward education 教育に対する態度	1	2	3	4	5					
8. Union-labour relationships 労使関係	1	2	3	4	5					
9. Rate of annual inflation (5=very high; 1=very low) インフレの進行度 非常に高い 非常に低い	1	2	3	4	5					
10. Governmental attitudes toward workers and business community 労使関係に対する政府の対応度	1	2	3	4	5					
I. Please give your opinion on the overall assessment on environmental conditions of your company. あなたの会社の職場環境をどのように総合評価しますか。										
<u>Very poor</u> 劣っている					<u>Excellent</u> すぐれている					
1	2	3	4	5	6	7	8	9	10	

Questionnaire 2: Management Philosophy

アンケート 2: 経営方針について

Please circle a number for each indicator below which most closely describes your opinion.

下記の各項目についてあなたの意見に一番近いものの番号を○で囲んでください。

Indicators 項目	No Concern 関心がない			Very Concern 関心が高い					
	1	2	3	4	5				
1. Management's policy toward employee development 従業員の能力開発に対する経営方針	1	2	3	4	5				
2. Employee's perception of company's concern toward individual development 会社側の従業員能力開発に対する関心についての従業員側の認識程度	1	2	3	4	5				
3. Degree of permanent employment 雇用の安定度	Least (or poor) 少ない(又は劣っている)			Most (or good) 多い(又はすぐれている)					
4. Decision-making by consensus 社内のコンセンサスに基づいた方針決定	1	2	3	4	5				
5. Percent of company stock own. by the parent company 親会社が所有している自社株の割合	1	2	3	4	5				
6. Motivation to improve employee morale 従業員のモラル向上に対する努力	1	2	3	4	5				
7. Company-sponsored recreational activities 会社主催のレクリエーション活動	1	2	3	4	5				
8. Management support for quality control circles or informal group activities QCサークル又は自主グループ活動に対する会社側の支援	1	2	3	4	5				
9. Solicitation of employee's suggestions 従業員の提案に対する会社側の受容度	1	2	3	4	5				
10. Basis on which the firm gives promotion 会社側の昇進基準	Seniority alone 勤務年数のみ		Seniority and performance 勤務年数と成績		Performance alone 成績のみ				
	1	2	3	4	5				
II. Please give your opinion on the overall assessment on management philosophy of your company. あなたの会社の経営方針をどのように総合評価しますか。									
Very poor 劣っている			Excellent すぐれている						
1	2	3	4	5	6	7	8	9	10

Questionnaire 3: Management Functions/Practices

アンケート 3: 経営活動について

Please circle a number of each indicator below which most closely describes your opinion.

下記の各項目について、あなたの意見に一番近いものの番号を○で囲んで下さい (or poor) Least Most (or good)

項目	1	2	3	4	5
1. Planning orientation 計画立案方法	1	2	3	4	5
2. Quality control 品質管理	1	2	3	4	5
3. Equipment maintenance 設備の維持管理	1	2	3	4	5
4. Standard settings for production workers 生産労働者に対する作業基準の設定 (1=Not done; 5=Systematically done) 1=されていない; 5=組織的にされている	1	2	3	4	5
5. Standard setting for supervisory personnel 監督者層の業務基準の設定 (1=Not done; 5=Systematically done) 1=されていない; 5=組織的にされている	1	2	3	4	5
6. Budgeting and resource allocating 予算と原材料の割当て方法	1	2	3	4	5
7. Managers' perception of subordinates 管理者の部下に対する理解度 (1=Not confident; 5=Confident) 1=自信がない; 5=自信がある	1	2	3	4	5
8. Difficulty of managing subsidiary in Singapore. シンガポールにおいて、経営上のメリットを得る可能性 (1=very difficult; 5=Not difficult) 1=非常にむずかしい; 5=容易に得られる	1	2	3	4	5
9. Actions taken to improve efficiency 効率向上のためにとられた措置	1	2	3	4	5
10. Coordination of manufacturing activities 各部門の連携がとられた生産活動	1	2	3	4	5

III. Please give your opinion on the overall assessment on management functions/practices of your company.

あなたの会社の経営活動をどのように総合評価しますか。

Very poor										Excellent	
劣っている										すぐれている	
1	2	3	4	5	6	7	8	9	10		



Questionnaire 4: Management Effectiveness

アンケート 4 : 能率度について

Please circle a number of each indicator below which most closely describes your opinion.

下記の各項目についてあなたの意見に一番近いものの番号を○で囲んで下さい。(or poor)

項目	Least				Most
Indicators	(or poor)				(or good)
1. Management ability to attract and retain high-level manpower 優秀な人材を確保する会社の能力	1	2	3	4	5
2. Employees morale and satisfaction in work 仕事に対する従業員のモラルと満足感	1	2	3	4	5
3. Employee turnover and absenteeism. 従業員の転職及び欠勤率 (1=very high; 5=very low) 1=非常に高い; 5=非常に低い	1	2	3	4	5
4. Interpersonal relationships in organizational settings 組織内における人間関係	1	2	3	4	5
5. Departmental relationships 各部門間の連携関係	1	2	3	4	5
6. The executive's perception of the firm's overall objectives. (1=Departmental objective is most important) (5=Company's objective is most important) 会社の全体的目標設定についての トップの認識 部署の目標が最重要 会社の目標が最重要	1	2	3	4	5
7. Utilization of high-level manpower 優秀な人材の活用度	1	2	3	4	5
8. Organizational effectiveness in adapting to Singapore environment. (1=Much difficulty; 5=Without much difficulty) 1=非常に困難 5=大した問題はない	1	2	3	4	5
9. Impression of Singaporean workers toward expatriate managers シンガポール労働者の外国人管理者に対する印象	1	2	3	4	5
10. Efficiency of subsidiary/parent plant 親会社の援助の効果	1	2	3	4	5

IV. Please give your opinion on the overall assessment on management effectiveness of your company.

あなたの会社の能率度についてどのように総合評価しますか。

Very poor									Excellent
1	2	3	4	5	6	7	8	9	10

→

A P P E N D I X 2

INTERVIEW FORM

APPENDIX 2

Company : \_\_\_\_\_  
Person Interviewed : \_\_\_\_\_  
Designation : \_\_\_\_\_  
Address : \_\_\_\_\_  
Telephone No : \_\_\_\_\_

1. General Description

a) Year of beginning of manufacturing activity \_\_\_\_\_

b) Type of legal organization

Sole proprietorship

Partnership

Public limited liability company

Private limited liability company

Others \_\_\_\_\_

c) As a subsidiary in the group, state your degree of autonomy.

	High	Medium	Low
Management policy, namely			
i) Marketing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) Employment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii) Financing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv) Choice of production technique	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

d) Main types of products :



e) Share of local equity capital:

Wholly foreign

More than half foreign

More than half local

Others : \_\_\_\_\_

f) Employees by nationality (number)

	S'pore citizen	Permanent citizen	Others	Total
Production workers				
Supervisory				
Manual service				
Technical				
Clerical				
Professional				
Management				

g) Training of local personnel.

Sent to parent factory \_\_\_\_\_

Normal length of training time \_\_\_\_\_

h) What are the three main factors that motivated your company to invest in Singapore?

Low wage cost

Stable and disciplined labour force

Investment incentives (tax holidays, etc)

Good government

- Political stability
- Good infrastructure
- Relatively risk-free
- Diversification of sourcing by internal organization
- Few language problems.

1) In your company generally satisfied with the performance of the Singapore plant? Yes/No

2. What modifications in the following aspects of Management did you make in order to adapt your managerial system to the Singaporean environment?

(a) Decision-making.

(b) Management development:

How are managers selected for overseas assignment in Singapore?

How were you selected for the Singapore assignment?

Did you volunteer?

Did you receive any special training for the Singapore assignment?

How do you recruit Singaporean managers for plant?

What qualifications would you expect them to possess?

Do you implement any systematic management development programs in the Singapore plant?

c) Employment

Do you resort to layoffs in times of slack demand?



In times of high demand, do you resort to overtime of employees, the hiring of temporary workers, or both?

Do you promote on the basis of seniority, productivity, or both?

d) Loyalty.

Do you instill employee loyalty to the firm. If yes, are you being successful?

e) Business/Government Relations

Do you find the Singapore government less concerned with the welfare of business enterprises than your government?

f) Labour relations:

Do you find unions in Singapore more vocal and more demanding?

3. What is your opinion of the "average" Singaporean worker? Is he as productive as the "average" in the parent plant?

Do you sponsor recreational activities for your employees? If so, do you believe this increases their loyalty to your firm?

4. Do you have problems in communicating between your plant and the home office?

5. What other problems did you encounter in the Singapore subsidiaries and how did you deal with them?

(a) Quality control problems?

(b) Resistance to change in managerial practices?

(c) Problems in the integration of overseas and local staff?

(d) Others

6. Has the productivity of the plant increased since you assumed control?

If so, what specific changes (besides those discussed in (previous questions) did you implement to improve productivity?



A P P E N D I X 3

Questionnaire 1: Environmental Conditions

Please circle a number for each indicator below which most closely describes your opinion of the environmental conditions in Singapore.

<u>Indicators</u>	<u>Least</u> <u>(or poor)</u>			<u>Most</u> <u>(or good)</u>	
1. Good attitudes toward persons in authority	1	2	3	4	5
2. Tendency toward teamwork	1	2	3	4	5
3. Importance of wealth and material gain	1	2	3	4	5
4. Literacy level of population	1	2	3	4	5
5. Availability of trained or skilled personnel	1	2	3	4	5
6. Availability of other workers	1	2	3	4	5
7. Attitude toward education	1	2	3	4	5
8. Union-labour relationships	1	2	3	4	5
9. Rate of annual inflation	1	2	3	4	5
(1=very high; 5=very low)					
10. Governmental attitudes toward the manufacturing industries	1	2	3	4	5
I. On the whole, what is your opinion on Singapore as an environment for your company to operate in.					

Very poorExcellent

1      2      3      4      5      6      7      8      9      10

下記のシンガポールの職場環境について各項目の中に  
 Please circle a number for each indicator below which most closely  
 あなたの意見に一番近いものの番号を○で囲んでください。  
 describes your opinion of the environmental conditions in Singapore.

項目 Indicators	少ない(又は劣っている) Least (or poor)			多い(又はすぐれている) Most (or good)	
	1	2	3	4	5
1. 上司に対する良い態度 Good attitudes toward persons in authority	1	2	3	4	5
2. チームワークを重視する傾向 Tendency toward teamwork	1	2	3	4	5
3. 財物を重視する態度 Importance of wealth and material gain	1	2	3	4	5
4. 識字率の程度 Literacy level of population	1	2	3	4	5
5. 訓練された人材獲得の可能性 Availability of trained or skilled personnel	1	2	3	4	5
6. 他の従業員にも獲得の可能性 Availability of other workers	1	2	3	4	5
7. 教育に対する態度 Attitude toward education	1	2	3	4	5
8. 労使関係 Union-labour relationships	1	2	3	4	5
9. インフレーションの進行度 Rate of annual inflation 非常に高い 非常に低い (1=very high; 5=very low)	1	2	3	4	5
10. 製造工業に対する政府の 態度 Governmental attitudes toward the manufacturing industries	1	2	3	4	5

I. あなたの会社はシンガポールの職場環境で経営すれば、  
 On the whole, what is your opinion on Singapore as an  
 環境にどう考えていますか  
 environment for your company to operate in.

劣っている  
Very poor

すぐれている  
Excellent

1 2 3 4 5 6 7 8 9 10



Questionnaire 1(a): Environmental Conditions

Please circle a number for each indicator below which most closely describes your opinion of the environmental conditions in the United States.

<u>Indicators</u>	<u>Least</u> <u>(or poor)</u>			<u>Most</u> <u>(or good)</u>					
1. Good attitudes toward persons in authority	1	2	3	4	5				
2. Tendency toward teamwork	1	2	3	4	5				
3. Importance of wealth and material gain	1	2	3	4	5				
4. Literacy level of population	1	2	3	4	5				
5. Availability of trained or skilled personnel	1	2	3	4	5				
6. Availability of other workers	1	2	3	4	5				
7. Attitude toward education	1	2	3	4	5				
8. Union-labour relationships	1	2	3	4	5				
9. Rate of annual inflation	1	2	3	4	5				
(1=very high; 5=very low)									
10. Governmental attitudes toward the manufacturing industries	1	2	3	4	5				
I. On the whole, what is your opinion on the United States as an environment for your company to operate in.									
<u>Very poor</u>			<u>Excellent</u>						
1	2	3	4	5	6	7	8	9	10

アンケート 1(b) 職場環境について  
Questionnaire 1(b): Environmental Conditions

下記の日本の職場環境について各項目の中に  
 Please circle a number for each indicator below which most closely  
 あなたの意見に一番近いものの番号を○で囲んでください。  
 describes your opinion of the environmental conditions in Japan.

項目 Indicators	少ない(又は劣っている) Least (or poor)					多い(又はすぐれている) Most (or good)				
	1	2	3	4	5	1	2	3	4	5
1. 上司に対する良い態度 Good attitudes toward persons in authority	1	2	3	4	5					
2. チームワークを重視する傾向 Tendency toward teamwork	1	2	3	4	5					
3. 財物を重視する態度 Importance of wealth and material gain	1	2	3	4	5					
4. 識字率の程度 Literacy level of population	1	2	3	4	5					
5. 訓練された人材獲得の可能性 Availability of trained or skilled personnel	1	2	3	4	5					
6. 他の従業員にも獲得の可能性 Availability of other workers	1	2	3	4	5					
7. 教育に対する態度 Attitude toward education	1	2	3	4	5					
8. 労使関係 Union-labour relationships	1	2	3	4	5					
9. インフレの進行度 Rate of annual inflation	1	2	3	4	5					
非常に高い 非常に低い (1=very high; 5=very low)										
10. 製造工業に対する政府の 態度 Governmental attitudes toward the manufacturing industries	1	2	3	4	5					
I. 全体の会社は日本の職場環境で経営するには On the whole, what is your opinion on Japan as an environment for your company to operate in. おなれはと 考えていますか										
劣っている Very poor										すぐれている Excellent
	1	2	3	4	5	6	7	8	9	10

Questionnaire 2: Management Philosophy

Please circle a number for each indicator below which most closely describes the practices in your company.

<u>Indicators</u>	<u>No Concern</u>			<u>Great Concern</u>					
1. Management's concern for employee development	1	2	3	4	5				
2. Employee's perception of company's concern toward individual development	1	2	3	4	5				
	<u>Very little (or poor)</u>			<u>A Great Deal (or good)</u>					
3. Degree of permanent employment	1	2	3	4	5				
4. Decision-making by consensus	1	2	3	4	5				
5. Degree of autonomy given to the Singapore company	1	2	3	4	5				
6. Policies intended to improve employee morale	1	2	3	4	5				
7. Company-sponsored recreational activities	1	2	3	4	5				
8. Management support for quality control circles or informal group activities	1	2	3	4	5				
9. Solicitation of employee's suggestions	1	2	3	4	5				
	<u>Seniority alone</u>		<u>Seniority and perfor- mance</u>		<u>Perfor- mance alone</u>				
10. Basis on which the firm gives promotion	1	2	3	4	5				
II. On the whole, what is your assessment on management philosophy of your company.									
<u>Very poor</u>			<u>Excellent</u>						
1	2	3	4	5	6	7	8	9	10



アンケート 2: 経営方針について  
Questionnaire 2: Management Philosophy

下記の各項目についてあなたの会社で実行しているものの中で一番  
Please circle a number for each indicator below which most closely  
describes the practices in your company. 近いもの番号を○で囲んで下さい。

項目 Indicators	No 関心が Concern			Great 関心が Concern	
	1	2	3	4	5
1. 従業員の能力開発に対する経営者の Management's concern for employee development 関心.	1	2	3	4	5
2. 従業員側への会社側の Employee's perception of company's concern toward individual development 会社側の従業員能力開発に対する関心についての従業員側の認識程度.	1	2	3	4	5
	少 (又は) Very little (or poor)			多 (又は) A Great Deal (or good)	
3. 雇用の安定度 Degree of permanent employment	1	2	3	4	5
4. 社内コンセンサスに基づいた方針決定 Decision-making by consensus	1	2	3	4	5
5. シンガポール会社に自治権を与える程度 Degree of autonomy given to the Singapore company	1	2	3	4	5
6. 従業員モラル向上の経営方針 Policies intended to improve employee morale	1	2	3	4	5
7. 会社主催のレクリエーション活動 Company-sponsored recreational activities	1	2	3	4	5
8. QCサークル又は自主グループ活動に対する会社側の支援 Management support for quality control circles or informal group activities	1	2	3	4	5
9. 従業員提案に対する会社側の受容度 Solicitation of employee's suggestions	1	2	3	4	5
	勤続年数のみ Seniority alone		勤続年数と実績 Seniority and performance		実績のみ Performance alone
10. 会社側の昇進基準 Basis on which the firm gives promotion	1	2	3	4	5
II. 全体の会社経営方針をどのように総合評価しますか On the whole, what is your assessment on management philosophy of your company.					
	劣っている Very poor			すぐれている Excellent	
	1	2	3	4	5
	6	7	8	9	10

Questionnaire 3: Management Functions/Practices

Please circle a number for each indicator below which most closely describes your opinion regarding the quality of each function/practices in your company.

<u>Indicators</u>	<u>Least</u> (or poor)			<u>Most</u> (or good)	
1. Planning orientation	1	2	3	4	5
2. Quality control	1	2	3	4	5
3. Equipment maintenance	1	2	3	4	5
4. Standard settings for production workers (1=Not done; 5=Systematically done)	1	2	3	4	5
5. Standard setting for supervisory personnel (1=Not done; 5=Systematically done)	1	2	3	4	5
6. Budgeting and resource allocating	1	2	3	4	5
7. Managers' perception of subordinates (1=Not confident; 5=Confident)	1	2	3	4	5
8. Difficulty of managing the subsidiary in Singapore (1=very difficult; 5=Not difficult)	1	2	3	4	5
9. Actions taken to improve efficiency	1	2	3	4	5
10. Coordination of manufacturing activities	1	2	3	4	5

III. On the whole, what is your assessment of the quality of management functions/practices of your company.

Very poor

Excellent

1    2    3    4    5    6    7    8    9    10



アンケート 3: 経営活動について  
 Questionnaire 3: Management Functions/Practices

下記の各項目についてあなたの会社の各活動の効果に関して、一番近いものの番号を○で囲んでください  
 Please circle a number for each indicator below which most closely describes your opinion regarding the quality of each function/practices in your company

項目 Indicators	少ない(又は劣っている) Least (or poor)					多い(又はすぐれている) Most (or good)				
	1	2	3	4	5	1	2	3	4	5
1. 計画立案方法 Planning orientation	1	2	3	4	5					
2. 品質管理 Quality control	1	2	3	4	5					
3. 設備の維持管理 Equipment maintenance	1	2	3	4	5					
4. 生産労働者に対する作業基準の設定 Standard settings for production workers (1=Not done; 5=Systematically done)	1	2	3	4	5					
5. 監督者層の業務基準の設定 Standard setting for supervisory personnel (1=Not done; 5=Systematically done)	1	2	3	4	5					
6. 予算と原材料の割当て方法 Budgeting and resource allocating	1	2	3	4	5					
7. 管理者の部下に対する理解度 Managers' perception of subordinates (1=Not confident; 5=Confident)	1	2	3	4	5					
8. シンガポールにおいて、経営上のメリットを得る Difficulty of managing the subsidiary in Singapore (1=very difficult; 5=Not difficult)	1	2	3	4	5					
9. 効率向上のためにとられた措置 Actions taken to improve efficiency	1	2	3	4	5					
10. 各部門の連携がとられた、生産活動 Coordination of manufacturing activities	1	2	3	4	5					

III. On the whole, what is your assessment of the quality of management functions/practices of your company.

劣っている  
Very poor

すぐれている  
Excellent

1 2 3 4 5 6 7 8 9 10



Questionnaire 4: Management Effectiveness

Please circle a number for each indicator below which most closely describes your opinion regarding the management effectiveness in your company.

<u>Indicators</u>	<u>Least</u> <u>(or poor)</u>			<u>Most</u> <u>(or good)</u>	
1. Management ability to attract and retain high-level manpower	1	2	3	4	5
2. Employee's morale and satisfaction in work	1	2	3	4	5
3. Employee turnover and absenteeism. (1=very high; 5=very low)	1	2	3	4	5
4. Interpersonal relationships in organizational settings	1	2	3	4	5
5. Departmental relationships	1	2	3	4	5
6. The executive's perception of the firm's overall objectives. (1=Departmental objective is most important) (5=Company's objective is most important)	1	2	3	4	5
7. Utilization of high-level manpower	1	2	3	4	5
8. Organizational effectiveness in adapting to Singapore environment. (1=Much difficulty; 5=Without much difficulty)	1	2	3	4	5
9. Attitude of Singaporean workers toward expatriate managers	1	2	3	4	5
10. Efficiency of subsidiary/parent plant	1	2	3	4	5
IV. Please give your opinion on the overall assessment on management effectiveness of your company.					

Very poorExcellent

1    2    3    4    5    6    7    8    9    10

アンケート 4: 能率度について  
 Questionnaire 4: Management Effectiveness

下記の各項目についてあなたの会社で能率度に関して一番近いものを  
 Please circle a number for each indicator below which most closely describes your opinion regarding the management effectiveness in your company. 番号を○で  
囲んでください

項目 Indicators	少しい(又は劣っている) Least (or poor)			多い(又はすぐれている) Most (or good)		
	1	2	3	4	5	
1. 優秀な人材を確保する会社の能力 Management ability to attract and retain high-level manpower	1	2	3	4	5	
2. 仕事に対する従業員のモラルと満足感 Employee's morale and satisfaction in work	1	2	3	4	5	
3. 従業員の転職及び欠勤率 Employee turnover and absenteeism. (1=非常に高い; 5=非常に低い)	1	2	3	4	5	
4. 組織内における人間関係 Interpersonal relationships in organizational settings	1	2	3	4	5	
5. 各部門間の連絡関係 Departmental relationships	1	2	3	4	5	
6. 会社の全体的目標設定についてのトップの認識 The executive's perception of the firm's overall objectives. (1=Departmental objective is most important) 1=部課の目標が最重要 (5=Company's objective is most important) 5=会社の目標が最重要	1	2	3	4	5	
7. 優秀な人材の活用度 Utilization of high-level manpower	1	2	3	4	5	
8. シンガポールの風土に対する会社の適応度 Organizational effectiveness in adapting to Singapore environment. (1=Much difficulty; 5=Without much difficulty) 1=非常に困難 5=大した問題は無い。	1	2	3	4	5	
9. シンガポールの労働者の外国人管理者に対する態度 Attitude of Singaporean workers toward expatriate managers	1	2	3	4	5	
10. 親会社の援助の効果 Efficiency of subsidiary/parent plant	1	2	3	4	5	
IV. あなたの会社の能率度についてどのように総合評価しますか。 Please give your opinion on the overall assessment on management effectiveness of your company.						
劣っている Very poor						すぐれている Excellent

1      2      3      4      5      6      7      8      9      10

A P P E N D I X 4



APPENDIX 4

INTERVIEW FORM

I) GENERAL DESCRIPTION

1. Name of firm : \_\_\_\_\_

2. Address & telephone no.: \_\_\_\_\_  
\_\_\_\_\_

3. Name of person interviewed : \_\_\_\_\_

4. Designation : \_\_\_\_\_

5. Number of factories and location in Singapore :  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Year of beginning of manufacturing activity \_\_\_\_\_

7. Type of legal organization :

- sole proprietorship [ ]
- partnership [ ]
- public limited liability company [ ]
- private limited liability company [ ]
- others [ ]

8. Country of incorporation - Head Office (for multinational subsidiary, parent company location) :  
\_\_\_\_\_  
\_\_\_\_\_

9. Brief company profile :  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

10. As a subsidiary in the group, state your degree of autonomy in (please tick)

	high	medium	low
a) management policy, namely,			
i) marketing	[ ]	[ ]	[ ]
ii) employment	[ ]	[ ]	[ ]
iii) financing	[ ]	[ ]	[ ]
b) choice of production technique	[ ]	[ ]	[ ]

11. Main Types of Products : (indicating the % share of each in the total)

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---

II CAPITAL STRUCTURE AS AT 1984 ( OR SPECIFY LATEST YEAR \_\_\_\_\_ )

12. Authorized capital \$ \_\_\_\_\_

13. Issued & paid-up capital \$ \_\_\_\_\_

14. Amount (proportion) invested by Singaporean residents \_\_\_\_\_

Amount (proportion) invested by foreigners (specify major nationality) i.e.

Share of local equity capital : \_\_\_\_\_ %

wholly local [ ]

more than half foreign [ ]

more than half local [ ]

wholly foreign [ ]

Percentage share of parent company owned by other company if any:

Percentage share : \_\_\_\_\_

Name of company : \_\_\_\_\_

15. Capital expenditure on machinery and equipment S\$ \_\_\_\_\_

As percentage of total capital expenditure \_\_\_\_\_

III PRODUCTION AND COSTS AS AT 1984 (OR SPECIFY LATEST YEAR: \_\_\_\_\_)

16. Production :

Annual turnover S\$ \_\_\_\_\_

17. Sales :

Local sales S\$ \_\_\_\_\_

Foreign (exports) S\$ \_\_\_\_\_

18. Total costs S\$ \_\_\_\_\_

Proportion of costs as : (%)

Wages \_\_\_\_\_

Imported inputs \_\_\_\_\_

    Materials \_\_\_\_\_

    Components \_\_\_\_\_

    Parts & Machinery \_\_\_\_\_

Local inputs \_\_\_\_\_

    Materials \_\_\_\_\_

    Components \_\_\_\_\_

    Parts & Machinery \_\_\_\_\_

Professional & management service fees  
(specify foreign or local) \_\_\_\_\_

Licence fees & royalty payments  
(specify foreign or local) \_\_\_\_\_

Value added : \_\_\_\_\_



IV EMPLOYMENT & REMUNERATION AS AT 1984 (OR SPECIFY LATEST YEAR)

19. Employees by nationality (number) :

	Singapore Citizen =====	Permanent Resident* =====	Others =====	Monthly Salary =====
Production Workers	_____	_____	_____	_____
Supervisory	_____	_____	_____	_____
Manual Service	_____	_____	_____	_____
Technical	_____	_____	_____	_____
Clerical	_____	_____	_____	_____
Professional(Technical)	_____	_____	_____	_____
Management				
Line : a) Production	_____	_____	_____	_____
b) Design	_____	_____	_____	_____
c) Others	_____	_____	_____	_____
Staff : a) Personnel	_____	_____	_____	_____
b) Financial	_____	_____	_____	_____
c) Sales	_____	_____	_____	_____
d) Admin.	_____	_____	_____	_____
e) Purchasing	_____	_____	_____	_____
f) Maintenance	_____	_____	_____	_____
g) Others	_____	_____	_____	_____

Description of temporary staff if any : \_\_\_\_\_

\* Please specify nationality

20. How do wages in Singapore compare with your country taking into account productivity differences?

Workers : \_\_\_\_\_

Middle management : \_\_\_\_\_

Senior management : \_\_\_\_\_

21. (a) What sort of production processes do you transfer to Singapore?

Old processes [ ]

Existing processes [ ]

New processes [ ]

(b) Why were such processes transferred ?

---

#### V TRAINING OF LOCAL PERSONNEL

22. Method of training local personnel :

for local staff sent to parent company -  
normal length of training time \_\_\_\_\_

difficulties involved in overseas training - .

---

23. Do you make use of the any of the following government training centres & institutions :

Specify type and level of courses

[ ] VITB \_\_\_\_\_

[ ] EDB \_\_\_\_\_

[ ] NPB \_\_\_\_\_

[ ] SIM \_\_\_\_\_

[ ] NTI \_\_\_\_\_

[ ] NUS \_\_\_\_\_

[ ] OTHERS \_\_\_\_\_

VI MANAGEMENT AND PERFORMANCE OF THE SINGAPORE SUBSIDIARY

24. What are the three main factors that motivated your company to invest in Singapore ?

- Low wage cost [ ]
- Stable and disciplined labour force [ ]
- Investment incentives (tax holidays, etc) [ ]
- Good government [ ]
- Political stability [ ]
- Good infrastructure [ ]
- Relatively risk-free [ ]
- Few language problems [ ]
- Others : \_\_\_\_\_ [ ]

List the three factors in the order of importance :-

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

25. Is your company generally satisfied with the performance of the Singapore subsidiary ?

Yes / No

If yes, what are the important features : \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

If no, what are the shortcomings : \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



26. What modifications in the following aspects of management did you make in order to adapt your managerial system to the Singapore environment ?

(a) Decision-making :

Do you consciously have to make adaptations ?

---

---

---

(b) Management development :

How are managers selected for overseas assignment in Singapore?

---

---

How were you selected for the Singapore assignment ?  
Did you volunteer ?

---

---

How do you recruit Singaporean managers for your firm ?  
What qualifications and personal qualities would expect them to possess ?

---

---

Do you implement any systematic management development programmes in the Singapore subsidiary ?

---

---

26 (c) Employment :

Do you maintain the same salary structure and fringe benefits taking into account the pay differentials between Singapore and your country of origin ?

---

---

---

Do you resort to layoffs in times of slack demand ?

---

---

In times of high demand, do you resort to overtime of employees, the hiring of part-time workers, shift-changing (2 to 1, 1 to 2 etc.) or any other means ?

---

---

Do you promote on the basis of seniority, performance or both ?

---

---

(d) Loyalty :

Do you instill employee loyalty to the firm. If yes, how do you go about doing it and are being successful ?

---

---

(e) Business / government relations :

Do you find the Singapore government less concerned with the welfare of business enterprises than your government ?

---

---

(f) Labour relations :

Do you find unions in Singapore more vocal and more demanding ?

---

---

Do you favour unions in your firm ?      Yes / No

If yes, how can your firm be benefited ?

---

---

If no, what are the problems ?

---

---

27. What is your opinion of the "average" Singaporean worker ? Is he as productive as the "average" worker in the parent company ?

---

---

What is your opinion of the working attitude of the "average" Singaporean worker as compared to "average" the parent company ?

---

---

Is the "average" Singaporean worker as flexible as "average" in your parent company in accepting job changes ?

---

---

Do you sponsor recreational activities for your employees ? If so, do you believe this increases their loyalty to your firm ?

---

---



28. Do you have problems in communicating between your plant and the home office ?

---

---

29. What other problems did you encounter in the Singapore subsidiary and how did you deal with with them ?

(a) Quality control problems ?

---

---

(b) Resistance to change in managerial practices ?

---

---

(c) Problems in the integration of overseas and local staff ?

---

---

(d) Others :

---

---

30. Has the productivity of the firm increased since you assumed control ?

---

---

If so, what specific changes (besides those discussed in the previous questions) did you implement to improve productivity ?

---

---

31. Have you any future plans for the firm ?

---

---

A P P E N D I X 5

APPENDIX 5

Lim Teow Ek  
c/o Nanyang Technological  
Institute  
Upper Jurong Road  
Singapore 2263

Dear Sir,

RESEARCH ON U.S. AND JAPANESE MANAGEMENT SYSTEMS AND THEIR  
TRANSFERABILITY TO THE SINGAPORE INDUSTRY (PILOT STUDY)

I refer to our telephone conversation on \_\_\_\_\_ and would like to thank you for agreeing to an interview at \_\_\_\_\_ on \_\_\_\_\_.

Enclosed herewith are two sets of questionnaires and one set of interview form which I will be using for the interview. Please complete questionnaire set A and send set B for completion by your headquarters in the USA/Japan. I would like to assure you that the results of the research will be kept strictly confidential.

Thanking you,

Yours Sincerely,

Enlosures



A P P E N D I X 6

APPENDIX 6

Lim Teow Ek  
c/o Nanyang Technological  
Institute  
Upper Jurong Road  
Singapore 2263

Dear Sir,

MAIN RESEARCH STUDY ON U.S. AND JAPANESE MANAGEMENT  
SYSTEMS AND THEIR TRANSFERABILITY TO THE SINGAPORE INDUSTRY

I refer to our telephone conversation on \_\_\_\_\_ and would like to thank you for agreeing to an interview at \_\_\_\_\_ on \_\_\_\_\_.

Enclosed herewith are two sets of questionnaires, one set of interview form which I will be using for the interview and a letter of introduction from Dr Mark Oakley of the University of Aston Management Centre. Please complete questionnaire set A and send set B for completion by your headquarters in the USA/Japan. I would like to assure you that the results of the research will be kept strictly confidential.

Thanking you,

Yours Sincerely,

Enclosures

Page removed for copyright restrictions.



APPENDIX 7

Example showing calculations for two-way ANOVA table

Questionnaire 1 : Environmental Conditions

Indicator 1 : Good attitudes toward persons in authority

Questionnaire Data :-

INDUSTRIAL SECTOR	U.S. PARENT COMPANIES N = 20	U.S. SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE SUBSIDIARIES IN SINGAPORE N = 20	JAPANESE PARENT COMPANIES N = 20	
1	4 4 3 4 3 (18)	3 4 3 4 3 (17)	3 3 3 3 3 (15)	4 5 5 4 4 (22)	TOTAL = 72 MEAN = 3.6 SD = 0.68
2	3 4 4 4 4 (19)	4 4 3 3 4 (18)	4 3 3 3 3 (16)	5 4 4 4 4 (21)	TOTAL = 74 MEAN = 3.7 SD = 0.57
3	4 4 3 4 4 (19)	4 4 4 4 3 (19)	3 3 3 3 2 (14)	4 4 3 4 5 (20)	TOTAL = 72 MEAN = 3.6 SD = 0.68
4	4 4 4 3 4 (19)	4 4 3 4 4 (19)	3 2 3 3 3 (14)	5 4 5 4 4 (22)	TOTAL = 74 MEAN = 3.7 SD = 0.73
TOTAL	75	73	59	85	292
MEAN	3.75	3.65	2.95	4.25	3.65
SD	0.44	0.49	0.39	0.55	0.66

Calculations :-

$$\text{Correction factor (C.F.)} = T^2/N = 292^2/80 = 1065.8$$

$$\begin{aligned} \text{Total sum of squares} &= (4^2 + 4^2 + 3^2 + \dots + 4^2) - \text{C.F.} \\ &= 1091 - 1065.8 = 25.2 \end{aligned}$$

$$\text{Degrees of freedom} = 80 - 1 = 79$$

$$\begin{aligned} \text{Sum of squares (Firms)} &= 1/20 (75^2 + 73^2 + 59^2 + 85^2) - \text{C.F.} \\ &= 1083 - 1065.8 = 17.2 \end{aligned}$$

$$\text{Degrees of freedom} = 4 - 1 = 3$$

$$\begin{aligned} \text{Sum of squares (Industrial Sectors)} \\ &= 1/20 (72^2 + 74^2 + 72^2 + 74^2) - \text{C.F.} \\ &= 1066 - 1065.8 = 0.2 \end{aligned}$$

$$\text{Degrees of freedom} = 4 - 1 = 3$$

$$\begin{aligned} \text{Sum of squares (Firms and Sectors)} \\ &= [ 1/5 (18^2 + 17^2 + 15^2 + \dots + 22^2) - \text{C.F.} ] \\ &\quad - \text{sum of squares (industrial sectors)} \\ &\quad - \text{sum of squares (firms)} \\ &= [1084.8 - 1065.8] - 0.2 - 17.2 \\ &= 1.6 \end{aligned}$$

$$\text{Degrees of freedom} = 16 - 1 - 3 - 3 = 9$$

$$\begin{aligned} \text{Sum of squares (error)} &= \text{Total sum of squares} \\ &\quad - \text{sum of squares (firms)} \\ &\quad - \text{sum of squares (industrial sectors)} \\ &\quad - \text{sum of squares (firms and sectors)} \\ &= 25.2 - 17.2 - 0.2 - 1.6 \\ &= 6.2 \end{aligned}$$

$$\text{Degrees of freedom} = 79 - 3 - 3 - 9 = 64$$

ANOVA TABLE

FACTORS	SUM OF SQUARES	D.F.	ESTIMATE OF VAR.	F-RATIO	F0.05	F0.01
FIRMS	17.2	3	5.733	59.17	2.755	4.118
INDUSTRIAL SECTORS	0.2	3	0.067	0.688	2.755	4.118
INTERACTION FIRMS & SECTORS	1.6	9	0.178	1.835	2.04	2.714
ERROR	6.2	64	0.097			

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