The transferability of Japanese and western production management practices to petrochemical organisations in Saudi Arabia

Fahad Saleh Adham

THE TRANSFERABILITY OF

JAPANESE AND WESTERN PRODUCTION

MANAGEMENT PRACTICES TO

PETROCHEMICAL ORGANISATIONS

IN SAUDI ARABIA

BY

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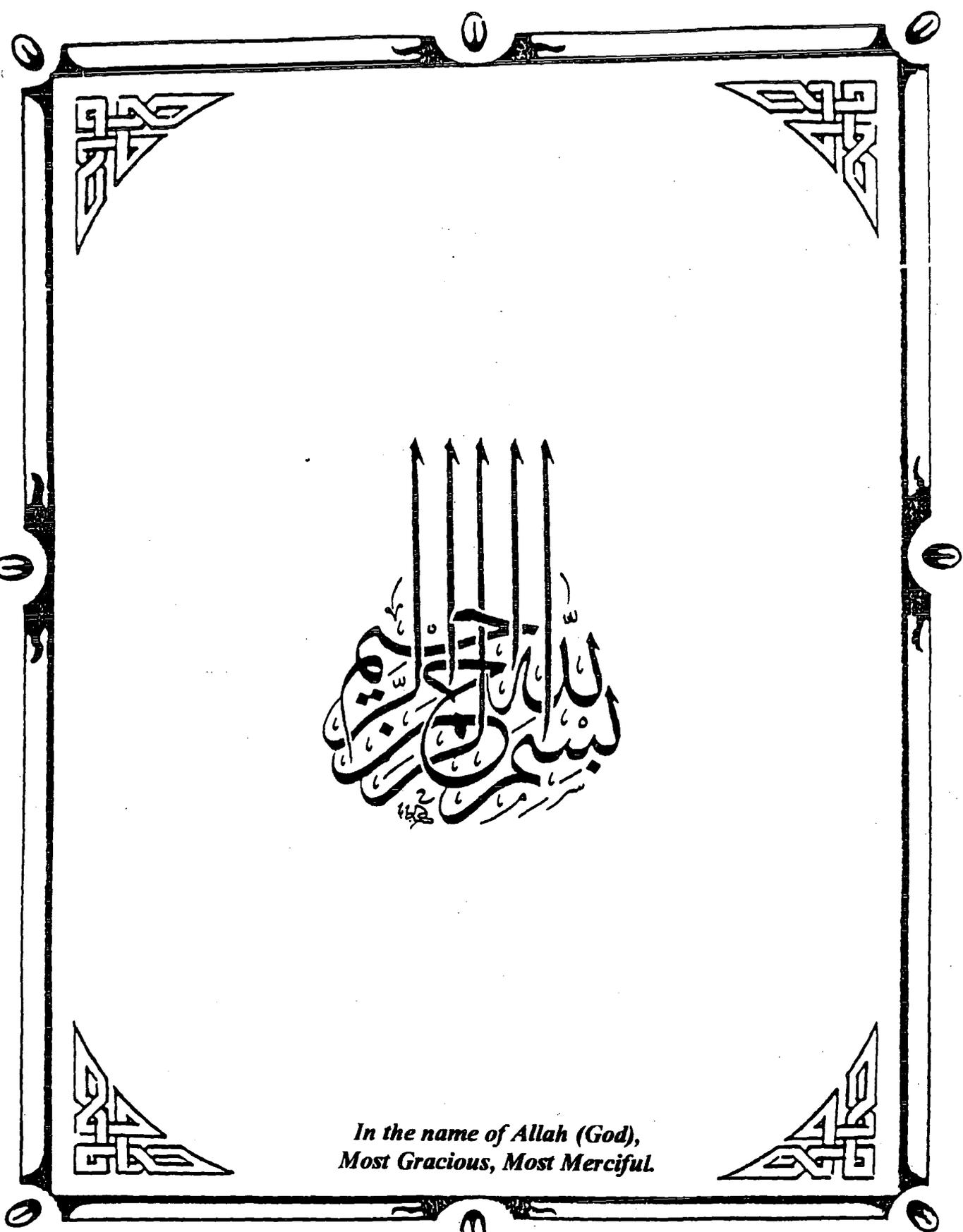
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بسم الله الرحمن الرحيم

In the name of Allah (God),
Most Gracious, Most Merciful.

Dedication

For

Saleh, Najat, Elham and Rana, with love

This thesis is entirely my own work and has not previously been offered in candidature for any degree or diploma.

Fahad Saleh Adham

Abstract

This thesis seeks to identify the characteristics of Japanese and western management practices concerning product quality, and their transferability to the petrochemical industry in Saudi Arabia.

The thesis is divided into seven chapters. Chapter One discusses the purpose and value of this research. Chapter Two introduces the management practices of developing countries and Saudi Arabia in particular, to assist in the understanding of this subject. The experience of western and Japanese companies in transferring their management practices abroad is discussed in Chapter Three.

To carry out this study, a model has been developed in Chapter Four, adopted from the theoretical models of Neghandi and Frasada (1971) and Horn, Grubb-Ingram and Masson (1987). This model suggests that product quality can be achieved through improvements in management philosophy, management functions and production management.

Chapter Five shows the results of the questionnaire analysis and Chapter Six discusses the findings of the research. Finally, Chapter Seven provide a summary of the research findings which showed both the Japanese and western management practices have contributed considerably to an improvement in product quality in the Saudi petrochemical industry. Both the Japanese and western companies have employed their management practices in their subsidiaries in Saudi Arabia to a considerable extent; however, both Japanese and western practices have been influenced by the business environment in Saudi Arabia to a certain extent.

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Table of Contents

Part One

CHAPTER ONE

Introduction and Overview

1.1 The Research Problem

Quality is becoming one of the important issues of this decade. The customer has been more sophisticated and no longer uses prices alone; customers give the same consideration to both quality and price when deciding between products.

Garvin (1988) suggested that even though management concern about quality has increased since the beginning of this decade, the customers' requirement for quality has increased relatively faster than the quality improvement action taken by many firms. A 1981 survey reported that nearly 50 per cent of US consumers felt that the quality of American products had dropped during the previous five years.

Garvin also referred to other survey reports between 1973 and 1983, which indicated that one quarter of respondents were "not at all confident" that they could depend on industry to deliver reliable products.

Oakland (1989) indicated that quality problems during 1978 cost British industry ten billion pounds. This was equivalent to ten per cent of the United Kingdom's gross national product.

The Saudi Ministry of Planning (1986) stated that, according to the Fourth Development Plan (1985-1990),

> "There is a growing competition for the declining volume of government project, putting pressure on margins and requiring performance to be of higher quality."

1

Japanese firms provide an instructive contrast. Their quality performance has been enviable, with dramatic improvement since World War Two. McMillan (1989) emphasised that names such as Nissan, Toyota, and Sony have become synonymous with superior quality and reliability, and "Made in Japan" is now a mark of distinction. Japanese companies have achieved this progress in the quality and reliability of their goods by applying different techniques that they have imported from western countries, particularly from the United States. Japanese industry followed American industry in the nineteen fifties and sixties and transferred and accommodated different techniques and technological systems into the Japanese system based on their needs.

Today the Japanese management practices in developing high quality products and competitive prices in the international market are coming to be the centre of an international debate for this decade. What can the Saudi industrial firms learn from the experience of both the Japanese and western management in improving their product quality and productivity? Is it possible to transfer these Japanese and western styles to the Saudi business environment? To what extent are the Japanese and western management practices effective in their application in industrial companies in Saudi? This is the aim of this research.

1.2 The Purpose of the Study

The object of this study is twofold: firstly, to identify the characteristics of the Japanese and western management practices with regard to product quality; and, secondly, to establish the extent to which these management practices are transferable to the petrochemical organisations in Saudi Arabia.

2

Generally, the objectives of this research are as follows:

- To identify the characteristics of the Japanese and western management practices in relation to product quality, and to determine how effectively the Japanese and western companies could employ their management practices in the Saudi industrial sector.

- To determine the extent to which those Japanese and western management practices relating to product quality have contributed to improving the quality of products in both Japanese and western organisations working in Saudi Arabia and in Saudi organisations as well.

- To determine to what extent the traditional Saudi management practices relating to product quality are similar to the original techniques of the Japanese and western practices, which would help the Saudi firms to evaluate their system by comparing their system to those of the Japanese and western companies.

- To determine the influence of culture in transferring the Japanese and western management practices to the Saudi industrial sector.

- To survey general problems encountered in transferring the Japanese and western management practices to the Saudi industrial sector.

1.3 The Value of the Study

This study is very important because this subject is a significant issue in management. This study discusses the concept of transferring management practices to other parts of the world. Many researchers have done work in this area, particularly in the United States and the United Kingdom.

Saudi Arabia is considered as one of the well recognised developing countries trying to build its own strong economic base in the same way as any other nation. According to the Saudi Fourth Development Plan, 1985-1990,

> *"The industrial sector has a prominent role to play in the growth and diversification of the economy."*

There is no evidence of similar work concerning the transferability of Japanese and western management techniques relating to product quality. Therefore this work is considered very important for the Arab countries, particularly the Kingdom of Saudi Arabia for the following reasons:

- To highlight the importance of understanding the concept of management and its transferability to Saudi Arabia, bearing in mind the influence of culture in this regard. While Saudi Arabia has a different culture to both Japan and the western countries, Saudis have stressed that they have learnt from their experiences while maintaining their own culture.

- To learn from both the Japanese and western experience of producing high quality products with competitive prices.

- To discover the real advantages and disadvantages of the Japanese and western management practices relating to product quality. Having determined this, Saudi industrial firms could incorporate the benefits of such a system in building their own system that will enable them to compete effectively in the domestic and international market. Also knowing the disadvantages will benefit them by avoiding these problems in designing their system, in addition to providing them with a better understanding of their competitors.

- Although this study basically relates to the petrochemical sector in Saudi Arabia, other sectors within the Kingdom of Saudi Arabia may be able to benefit, such as the agricultural sector, the service sector, and the trading sector in any future research.

1.4 Research Methodology

This research will be a field investigation based on a very wide and comprehensive review of the Japanese and western management systems in relation to product quality. This study will use three methods:

1. Survey questionnaires
2. Personal interviews
3. Official documents

The first method used questionnaires to collect the data in some categories based on the research design. The questionnaire is divided into four sections. The first provides general information about the factories in each group and their managers

5

who took part in the survey. The second explores the management philosophy applied by the factories in relation to product quality. The elements in this section include management philosophy toward employees, customers, suppliers, competitors and the government. The third section covers the management practices with regard to product quality, including planning, organising, leading and controlling. The Fourth section covers production management involving product design, suppliers' performance and production operation.

Chapter Four will contain a clearer explanation of this, as the whole chapter will discuss in detail all aspects relating to the research methodology and design.

The second method consists of personal interviews with Saudi, western and Japanese senior managers who work in these organisations in Saudi Arabia, to clarify some aspects of the results obtained from the analysis of the questionnaires, in addition to generating some information relating to problems facing them in connection with improvements in product quality.

The third method of data collection consists of documents collected from firms and government offices. The researcher used the documents collected to help in understanding the managers' responses in the interviews as well as their responses to the questionnaire.

1.5 Limitations of the Study

This study is an exploratory one, and it does not attempt to explain fully the cause and effect relationship of independent variables vis-a-vis dependant variables. The study is limited to what other researchers have written about this subject in the English and Arabic languages. Since this study only involves Japanese, western and Saudi managers who work in petrochemical organisations in Saudi Arabia, the findings and conclusions may not apply to dissimilar settings. Chapter Seven will discuss the limitations of this study in greater detail.

1.6 Organisation of the Dissertation

The study is divided into seven chapters.

Chapter One serves as the introduction to the entire study. It provides brief information about the purpose of the research (the transferability of Japanese and western management practices to Saudi Arabia). It also explains the importance of this research to the Kingdom of Saudi Arabia, particularly to organisations in the petrochemical industry.

Chapter Two analyses management practices in Third World countries, and in Saudi Arabia in particular. The objective is to provide sufficient background knowledge of Saudi Arabia to assist in establishing the extent to which both western and Japanese management practices are transferable to organisations working in the Saudi petrochemical industrial sector.

Several aspects relating to management practices in Saudi Arabia are considered. Firstly, the influence of Islam on work, the high ethical standards imposed and the Muslim's trust in God are considered. Secondly, the meaning of work as seen by employes in different nations is described, with special emphasis being given to the attitudes and values of Saudi managers, and their degree of commitment to their employing organisations; the importance of those values in deciding management practices is discussed, comparing Saudi managerial values with those in other Arab countries and in the west. Lastly, the influence of government action, and its role in running the economy and the private sector is discussed.

Once the business environment in Saudi Arabia has been considered, management practices in developing countries are discussed, particularly in terms of their functions of planning, organising, staffing, leading and controlling. Following this, management practices in the Middle East are described as investigated by several researchers. Finally an extensive analysis of management practices in Saudi Arabia is provided.

Chapter Three provides some background information about the concept of management philosophy, including a review of opinions regarding the transferability of management to different parts of the world. This chapter also investigates the concept of management and its relation to local culture. It provides a review of the experience of both western and Japanese companies in transferring their management practices abroad. Finally the experience of Saudi managers in adapting to both western and Japanese management practices is considered.

Chapter Four discusses the research design and methodology applied in conducting this study. It deals with research design issues generally, and in this study in

particular, and the data collection methods applied to obtain the information for this study. Particular areas of discussion in the report include the model applied for this study, and the definition of the variables involved in this study. The relevant subjects are highlighted in this chapter, where choosing the appropriate population and deciding the sample size are discussed. The design of the questionnaires, the pilot study and the final fieldwork are also discussed, as are the method of processing and analysing the data.

Chapter Five provides an analysis of data from the questionnaire. (For more details about the analysis, please see tables attached to Appendix One).

Chapter Six contains a discussion of the final results of analysing the data generated from the questionnaire and interviews. Such discussion may explain the differences and similarities between western, Japanese and Saudi management practices with regard to product quality. Also this discussion expects to indicate major problems encountered in transferring the management practices of both the Japanese and western companies to the Saudi business environment.

Finally, Chapter Seven provides a general summary of the dissertation and conclusion. It also provides a discussion of some limitations for this study, in addition to some suggestions and recommendations for future research in this area.

CHAPTER TWO

Management in Saudi Arabia

2.1. Introduction

This chapter analyses management practices in third world countries, and Saudi Arabia in particular. The objective is to provide sufficient background knowledge of Saudi Arabia to assist in establishing the extent to which both western and Japanese management practices are transferable to organisations working in the Saudi Petrochemical industrial sector.

Several aspects relating to management practices in Saudi Arabia are considered: the business environment is described. Firstly, the influence of Islam on work, the high ethical standards imposed and the Muslim's trust in God is considered. Secondly, the meaning of work as seen by different nations is described, special emphasis being given to the attitudes of Saudi managers, their values and degree of commitment to their organisations; while comparing Saudi managerial values with those in other Arab countries and in the West, the importance of these values in deciding management practices is discussed. Lastly, the influence of government action, and its role in running the economy and the private sector will be considered.

Having described the business environment in Saudi Arabia, management practices in developing countries are considered, particularly in terms of their functions of planning, organising, staffing, leading and controlling. Following this, management practices in the Middle East are described as investigated by several researchers.

Finally, an extensive analysis of management practices in Saudi Arabia is provided.

At the end of the chapter a brief summary and conclusion are provided.

2.2 The Business Environment

The purpose of this chapter is to assist readers from outside Saudi Arabia, especially those from western countries, who may have little or no knowledge of the business environment in that country. This is very useful in contributing to the understanding of existing management practices, and the transferability of western and Japanese management practices to the Middle East, and to Saudi Arabia in particular.

Management practices in Saudi Arabia can be more clearly understood in the context of the business environment. This comprises three major elements, the influence of Islam, the meaning of work in Saudi Arabia and the role of the government in running the economy in both the public and the private sector.

2.2.1 The Influence of Islam

The influence of Islam on the business environment is divided into three parts. There is the Islamic concept of work, Islam's emphasis on high ethical standards in conducting business, and the Muslim belief and trust in God.

2.2.1.1 The Islamic Concept of Work

Islam is categorised as a comprehensive religion which covers all the spiritual aspects of the relationship between Man and Allah. It also deals with aspects of materialism with regard to organising and administering social affairs in all fields, to guarantee the rights of individuals and communities.

Tabilbi (1982) referred to this in his book "Finance in Islam". He noted that the concept of Islam is a doctrine and a system. The essence of this doctrine is the unity

of Allah and worship of him. The basis of the system is the happiness and integrity of that society, to the extent that it guarantees the rights of each individual if this does not contradict the community's interests. It is axiomatic that Islam is the law of Allah which is always available in the context of the public interest.

In his book, "Islam is a Doctrine and a Law", the Imam Shaltout (1980) clarified the role of a Muslim in life. Describing man or the individual, he considered two aspects. First, the spiritual side, where man has to refine himself and to be as close as possible to Allah, worshipping and carrying out His law as laid down in the holy Qur'an and the prophetic Suna (the two sources of Islamic legislation). Secondly, the material aspect, that guarantees to fulfil all Man's requirements including food, drink, clothes and any other needs. This aspect should be fulfilled provided that it does not clash with the spiritual aspects.

To meet the material aspect, Islam admits the concept of work. Concerning this aspect, Allah Almighty says in Sura Jumua:

> *"And when the prayer is finished, then may ye disperse through the land and seek of the Bounty of God."*

He also says in Sura Mulk:

> *"It is He who has made the earth manageable for you, so traverse ye through its tracts and enjoy of the sustenance which he furnishes: but into him is the resurrection."*

In the Suna, the second legislative source (Abassi, 1986), Omar Ibn Al-Khattabs, the second Khalifah, saw a group of men remaining in the Mosque worshipping, claiming that they were relying on Allah to provide. Omar said to them:

> *"Do not neglect or stop seeking sustenance as you know the sky doesn't rain Gold."*

These quotations reflect the positive view of Islam towards the concept of work. Moreover, Islam maximises the importance of work and considers it as a type of worship. Therefore a man must do his work up to the end of his life. Prophet Mohammed (SAW) stated that:

> "If the day of judgement comes while in your hands any seeds or plant, shall if you could plant it."

Islam also emphasises precision in work undertaken. Prophet Muhammed (SAW) stated that:

> "Allah loves when you do a job to do it the best."

Islam allows for a legal system in the area of work that does not come into conflict with Islamic principles, laying down certain rules and conditions to be applied among individuals. It also places limits on the activities of both employer and employee. The relationship between the two sides must be based on total brotherhood. Prophet Muhammed (SAW) emphasised this when he ordered employers to eat with their workers and wear the same clothes. He (SAW) stated that:

> "Your brothers are your helpless; God made them under your authority, feed them as you feed yourself, dress them as you dress yourself. Do not overburden them, and if you did so, help them."

A further point is that workers should be paid at the appropriate time on completion of their task. Prophet Muhammed (SAW) voiced this, saying:

> "Give the worker his pay before his sweat dries."

In addition, Islam does not prevent a rise in wages to correspond with the increasing effort the workers exert.

Islam also deals with the rules that are obligatory for any Muslim involved in commercial business. Reference is made to the issue of organising and administering individual affairs and commercial deals.

In the following section, the importance of high ethical standards in Islam and its effect on workers in Saudi Arabia will be considered.

2.2.1.2 High Ethical Standards of Islam

While laying down concrete foundations to regularise commercial business among individuals, Islam emphasises the importance of maintaining ethical standards as a major principle of commercial interaction among individuals. Concerning this issue, the holy Qur'an described prophet Muhammed (SAW) in Sura Qalam, Allah Almighty says:

> *"And then (standest) on an exalted standard of character."*

Several relevant issues stem from this tenet of Islam. Islam describes the relationship between individuals as a brotherhood. Allah Almighty says in Sura Hujurat:

> *"The Believers are but a single Brotherhood. So make peace and reconciliation between your two brothers."*

Consequently, Muslim businessmen must observe certain ways of speaking and addressing people, never using offensive language. Allah Almighty says in Sura Baqara:

> *"Speak fair to the people."*

Also in Sura, of the women, Allah says:

"Let them fear God, and speak words of appropriate (comfort)."

Tyranny, oppression and lies should not be the basis of dealings among people as described by Islam. They should be based on promise fulfilment as Prophet Muhammed (SAW) says:

> *"Who ever treats people with justice and speaks to them and doesn't tell lies, and fulfils his promises and not break them; he is the one whose nobleness is complete, and fairness is apparent and his brotherhood is a must."*

Islam also prohibits cheating. This is clear in the story of Prophet Muhammed (SAW) when passing by a food seller. He admired the physical appearance of the goods. However, when he put his hand in the container he found wet food hidden under the surface, and said, "What is this seller?" The seller replied, "It rained." Prophet Muhammed (SAW) replied, "Make your wares clear to the people to be seen."

The fulfilling of promises and rights is a requirement of Islam. Allah Almighty said, in Sura Maida:

> *"O ye who believe! Fulfil (all) obligations."*

Islam prohibited the ignoring of people's rights by businessmen. Allah Almighty said in Sura, The Women:

> *"O ye who believe! Eat not up your property among yourselves in vanities: But let there be amongst you traffic and trade."*

Islam also emphasised justice in dealings between individuals. Allah Almighty says in Sura, The Women:

> *"God doth command you to render back your trusts to those to who they are due; And when ye judge between man and man, that ye judge with justice."*

The principle of equality also must apply in business dealings. Allah Almighty says in Sura Al - Imran:

> *"And their Lord has accepted of them and answered them; "Never will I suffer to be last the work of any of you, be he male or female; Ye are members, one of another"."*

Islam recommends forgiveness and the acceptance of excuses. Allah Almighty says in Sura Nahil,

> *"And if ye do catch them out, catch them out no worse than they catch you out; But if ye show patience, that is indeed the best course for those who are patient."*

These examples offer only a synopsis of the ethical standards a Muslim businessman must follow when he deals with others.

2.2.1.3 Trust in God

Within the context of Islamic principles Man's trust in God encourages him in his work to satisfy his Maker. Allah will realise the consequence of his work, not Man. This means Man controls the causes, but not the effects or consequences, these being the decision of Allah. This point is important because people find it difficult to recognise certain issues or effects. Therefore he must leave it to Allah if he has good faith. Consequently, a Muslim frequently uses the phrase "In Sha Allah" in commercial dealings. In commercial tendering, for example, if a businessman made a great effort and eventually was not awarded the contract, he should understand that

16

his failure is due to the will of Allah who knows better than the businessman. Therefore, he must concede this effect without any objection.

2.2.2 The Meaning of Work

2.2.2.1 The Importance of Understanding the Meaning of Work

Awareness of the meaning of work is essential if one is to understand the business environment and management practices. England (1984) emphasises this:

> *"Work centrality and the meaning of work are powerful theoretical concepts which assist in the understanding of how and why certain managerial and organisational practices are developed."*

In another study conducted by Ali and Al-Shakhis (1989) it was suggested that differences in the patterns of meaning ascribed to work, show not only similarities and differences within and across nations, but also reveal the psychological attitudes of participants.

2.2.2.2 How the Meaning of Work is Viewed

People hold various views concerning the meaning of work which could be attributed to several factors. Ali and Al-Shakhis (1989) stated in their studies that these various meanings are due to the differences between individuals across societies, regions, organisational background and other factors. Several pieces of research have been conducted in relation to employees attitudes towards work.

A study by the MOW International Research Team (1986) attempted to identify the meaning of work across eight countries. They found that employees' views differed not only in the importance attached to work, but also in its function in their lives.

Anderson (1964) stressed that the Greeks held both work and workers in low esteem, while Katona, Strunpel and Zohn (1971) found that Germans in 1951 held negative attitudes towards work, considering it a heavy burden; however by 1962 their position had become significantly more positive. The authors said that the economic progress and rising standard of living in Germany caused this change in outlook.

In a previous study conducted by Lipsky in 1959, he found that the Saudi's had little enthusiasm for work for its own sake, seeing it as the means of providing certain minimum comforts to enjoy an adequate social and family life. In another study conducted by Al-Nimir and Palmer (1982) they stressed that neither high salaries nor the prestige associated with a position of higher authority were sufficient incentives to induce Saudi public managers to relocate away from parents and other relatives. Al-Kuwari (1985) suggested that;

> "Prior to the oil boom in the Arab Gulf, people valued hard work and productive efforts, but these values and the necessity of work in one's life have given way to leisure, apathy and contempt for manual work."

There is some ambiguity in this area: Ali (1989) found that Arab managers had positive attitudes towards work, scoring higher than their American and Scandinavian counterparts regarding the work ethic.

Ali and Al-Shakhis (1989) drew similar conclusions when they stressed that working is considered a central part of Saudi managers' lives. Their commitment was higher than American managers'. Eighty-four per cent of Americans indicated that they would continue working even if they had enough money to live comfortably, as compared to ninety-four per cent of Saudis.

The authors suggested three main reasons for the Saudis higher commitment to work. First, Islam supports the virtue of hard work and participation in economic activities. Commitment to work for Arabs reflects a commitment to these principles. A second reason was that in a society where long term economic well being is uncertain, people tend to value hard work (England, 1984). Since Saudi Arabia has no important natural resources except oil, Saudi managers recognise the need to build a solid economic base before the depletion of oil. Gardner (1972) suggested a third reason, that suffering and the harsh environment of the desert make it necessary for Saudis to develop an endurance strategy and to work hard.

2.2.2.3 The Importance of Managerial Values

The managerial value system is a primary factor in deciding management practices. Hofstede (1980 a, b), Muna (1980), Roy (1977), Drucker (1974), and Farmer and Richman (1970) stressed that management practices and their effectiveness can vary considerably between countries, the differences being attributed to cultural variations.

Rokeach (1973) indicated that:

> *"Managerial effectiveness can be achieved only through understanding other behaviour: social interaction, attitudes and ideology, evaluation, moral judgement, justifications of self and of others and comparisons of self with others."*

Cotgrave and Duff (1981) suggested that:

> *"Planned human behaviour, both personal and collective, is influenced by values. Therefore any change or discrepancy in the value system might provide a major key to understanding social and personality changes."*

19

Several researchers have noted the relationship between values and practice. Ali and Al-Shakhis (1985) referred to values as a "determinant" of management practices. Negandhi and Reiman (1972) and Haire, Ghiselli and Porter (1966) indicated that values affect organisational goals and strategy. Ali and Schaupp (1985) found that values influence managerial decisions while Rokeach (1973) suggested that values relate to motivation. Miller (1980) Kalleberg (1977) and Kazanaz (1978) suggest that values relate to work satisfaction. Al-maney (1981) believed that competing successfully in the Arab market depends not only on the provision of quality products and services, but also on familiarity with the Arab value system, customs and expectations.

Strong (1981) suggested that a change in traditional values, attitudes and beliefs would make economic growth more attainable. Ali and Al-Shakhis (1985) suggested that one way to facilitate economic growth in Saudi Arabia would be through an identification of the values and beliefs in Saudi society. They believed that clarification of values was important for three main reasons: first, there are institutions and values that may be inimical to growth, as indicated by Okun and Richardson (1961); secondly, human values influence not only individual behaviour and priorities, but also corporate decision making and strategy, as shown by Guth and Tagiuri (1965); and thirdly, if Government modernisation and investment programmes and other business activities can be designed in accord with essential values, they will be enhanced.

In seeking a technological future, Saudi Arabia could choose from a variety of methods. However, because the range of techniques is broad, it is

"The selection and ultimately, the values upon which the selection is based, that really counts." Toffler (1971)

2.2.2.4 Saudi Managerial Values

Having indicated the importance of managerial values, the value system in Saudi Arabia can be specifically identified. Most of the research on this topic has been done in the wider context of Arab values.

Al-Wardi (1951) suggests that in Arabian culture there is a dual system, consisting of the ancient values of a sedentary population and the values of the Bedouin society. The Bedouin emphasise courage, pride, show and rapaciousness, whereas the values from the sedentary tradition are endurance, hardship, submission and cunning.

Al-Wardi recognised that the Islamic and kinship environment has also affected the value pattern of the Saudi population. Both religion and tribal relations reinforce the authority, rules and hierarchy of the family, emphasising, submission, obedience dependency and respect for parents.

The author argues that human values determine managerial practices and behaviour. He divides human values into two general categories, each comprising three values.

The first category is the "Outer Directed" with tribalistic conformist and socio-centric values. The Outer Directed manager is adaptive to his or her situation in life, preferring structure and accepting rules, group norms and policies. A stable environment and working situation is preferred and although goals are set, the plans of others are followed.

The second category is "Inner Directed" with egocentric, manipulative and existential values. Managers in this category tend to be assertive and expressive, adapting the rules to accomplish their ambitions.

According to Flores and Hughes (1978) the Inner Directed manager attempts to influence and change his or her environment, setting goals that he pursues energetically.

Relative to Saudi Arabia, the conclusion of the authors' studies indicated that conformist values, (a sacrificial attitude, low tolerance of ambiguity, a need for structure and rules to follow) were dominant among Saudi Managers. Egocentric values, aggression, a selfish, restless or impulsive attitude and no inclination to live within the limits and constraints of society's norms, were the least dominant among Saudi Managers.

The authors suggested that Saudi Arabia is not a homogeneous society, they indicated that the coexistence of the traditional (outer-directed) and modern (inner-directed) values reflect the various styles of living and economic organisations that prevail. Riggs (1969) describes it as a "prismatic" society. In such a society both modern and traditional elements can and do exist in harmony.

2.2.2.5 Saudi Values compared with other Arab Countries

Most Arab countries share certain common characteristics in their history, religion and language, which in turn provides the basis for similarities in values.

Polk (1980) emphasised this:

> *"Arabs have similar values despite their differences in economic, educational and political attainment."*

However, Ali and Al-Shakhis (1989) stressed that:

22

"Managerial values seem to be influenced by circumstances other than common Islamic and Arabian application, and should not be assumed to be similar throughout the Arab world."

In their studies the two authors compared Saudi and Iraqi managers' beliefs about work. Although the two groups did not differ in their attitude to work, there was sufficient difference in emphasis to make them distinctive.

They suggest that Iraqi managers believed in hard work and independence, enjoyed challenging work and were more oriented toward team work, group success and the organisation's collective norms.

Saudi managers supported a free enterprise system, held a belief that the rich should not exploit others, that workers should receive a fair share, while they were more dubious about increases in leisure time.

2.2.2.6 Saudi Values compared with Western Countries

A knowledge of the similarities and differences between Saudi and Western values may simplify the transfer of western management techniques to Saudi Arabia.

Al-Twaijri (1989) compared Saudi and American managers' feelings of towards work. He found that both Saudi and American managers scored equally in several areas, such as: job satisfaction, job security, self esteem and prestige outside the company, and the amount of authority and opportunities for independent action within the organisation.

He found that American managers were more satisfied than Saudi managers with opportunities for friendship with people of other nationalities, their prestige among colleagues within the company and their opportunities for personal development. The Saudi managers were less satisfied than American managers concerning their

23

payment, their opportunities for decision making and that chance for advancement within the company.

A further important point to be considered is whether the personal values of managers might be subject to modification and if so the degree and speed with which this might be affected.

England (1978) stressed that the personal value systems of managers are relatively stable and do not change rapidly. England stated that in 1966 he measured the personal values of a national sample of United States managers. Professors Edward Lusk and Bruce Oliver of the University of Pennsylvania's Wharton School repeated this study in 1972, with a comparable sample of US managers. They found from their results that the widespread discussion of environmental and social issues, such as pollution, the Vietnam war, and changes in life-style, between 1966 and 1972 had probably been accompanied by changes in the value systems of managers. However, the differences between the value systems of the 1966 sample and the 1972 of managers were very small.

2.2.3 The Government Role

Saudi Arabia is an Islamic country, taking its legislation from the Islamic law. The King is the highest authority, some ministers being chosen to assist him. Although he is the highest authority, the law limits the King's role and he cannot take arbitrary decisions according to his own preferences. He makes his decisions based on the Islamic law that is generally recognised.

The government role is first, therefore, to ensure that all businesses in the private sector are based on Islamic law. As the government is the highest authority, it is necessary to practise some measures of protection with regard to the private sector, develop resources and administer wealth which is part of the National Income.

Al-Meer (1989) detailed the Saudi Arabian government's four development plans to stimulate its economic growth and to assist the private sector. During the First Five Year Plan (1970 - 1975) total expenditure was SR 80 billion (approximately US$22.8 billion). During the Second Five Year Plan (1975 - 1980) total expenditure increased to SR 700 billion, while in the Third Five Year Plan (1980 - 1985), the total reached SR 1209 billion. Finally, the Fourth Five year Plan (1985 - 1990) was approved with a total expenditure set at SR 1,000 billion.

Increasing technological development in agriculture and manufacturing industry have led to increasing government involvement in the private sector. The government offers financial grants and long-term loans without interest while land is offered to both farmers and industrialists for low prices. Other useful roles the government plays in this regard are encouraging foreign investment in co-operation with Saudi companies. The government raises no taxes on local commodities or international ones, and imported raw materials.

While the government must help the private sector according to Islam, another important role is to protect individuals from unscrupulous enterprises. This does not imply interfering with those companies' affairs, but offers Islamic protection for individuals and their properties. The Saudi Government has a supervisory role over private companies and seeks to correct any action that is contrary to the public interest.

The government showed this during the Gulf Crisis (1990) when it protected local and international interests by keeping oil prices constant, even if other companies tried to exploit the situation. When Iraq set the oil wells deliberately on fire in Kuwait, the Saudi government acted responsibly according to the interests of the international community by increasing its oil production. This contributed

substantially to the stability of oil prices in that situation. Locally, the Government protected the Saudi people by providing them with large amounts of food, keeping prices constant.

Beyond the protection of individuals, the government requires companies to employ a certain proportion varying according to the size of company.

To ease the process of obtaining work in the private sector, the government has established many skill and rehabilitation centres to give free training to workers. In the Five Year Development Plan, the government showed its interest in improving the skills of these workers by assigning a budget, which it has subsequently increased, specifically for this purpose.

In addition, the government has a pioneering role to set up the appropriate environment for business enterprises to establish themselves.

2.3. Management Practices in Developing Countries

The governments of less developed countries seeking economic growth regard the efficiency of management practice as a vital issue. Mee (1965) stressed that:

> *"Several explanations have been proposed to account for the differences in rates of growth among nations, but one factor which emerges as the single most important determinant of economic growth is management."*

Iboko (1976) emphasised the same point, stating that:

26

"There is a common belief among political leaders and experts that under-development of managerial capacity at all levels is a major cause of related economic progress in developing nations."

In another study, Seth (1971) found that management practices in India had insufficient specialisation, and promotion was not determined by merit or proven administrative performance. Seth considered that managers lacked the conceptual and diagnostic skills necessary for manpower and operational planning, co-ordination or for deciding financial requirements.

Another study in India conducted by Shejwalker (1987) stressed that a rigid "caste structure" inhibits the development of modern management techniques. In his research, he felt that management values in India did not allow a complete analysis of requirements, which reduced the opportunities for informed discussion and participation. Vyasulu (1986) found that Indian managers were predominantly bureaucratic and task oriented.

In a comparative study conducted by Hofstede (1987) the research showed that Arabians score high on uncertainty and conflict avoidance. Such cultural predilection affects management and personal relationships.

Yavas, Kaynak and Dilber (1985) found that most of the companies investigated in developing countries did not use a systematic approach, but engaged in short term planning. They state objectives in broad terms, which they did not communicate effectively to lower levels of management.

The authors suggested that certain environmental constraints influence a country's ability to plan. Political uncertainties, economic instability and a lack of available data impede long-term decisions. Faced with sharp economic fluctuations, political changes and alterations in government regulations, managers hesitate to commit themselves to long-term plans.

Ross and Bouwmessters (1972) also stressed that in less developed countries, short range planning is the typical business approach for the traditional speculative merchant. They did not find a willingness to plan for the long-term which they regard as "entrepreneurial, industrial and constructive".

In another study Flores (1972) reported that Philippine managers were less specific about their corporate goals compared to American managers. More of the American companies set targets in terms of sales volume, share of the market and return on equity. Compared with Philippine companies, more American firms continuously prepare plans for marketing, production, financial and other functions.

A small group of managers at the top makes the decisions concerning all organisational activities which they then communicated down the hierarchy as strict orders. In some firms suggestion boxes have been used, but many executives and workers claim that management discount any ideas put forward. Top managers assume the role of the providers of the major intellectual input, operating with a skill based on their own experience training and background. They are hesitant and unwilling to delegate authority, although at times they extract responsibility from a subordinate inappropriate to that individual's authority.

In their directing role, high proportion of managers spend considerable time on the supervision, inspection and control of subordinates. This style of leadership diverts attention from other managerial duties.

In terms of staffing Flores (1972) found that larger companies in less developed countries are answerable directly to the President. Manpower planning, where it occurs, is for skilled labour that is difficult to find, needs being determined by the Personnel Manager and the supervisors annually. Smaller firms employ a few clerks to decide questions of hiring and compensation.

A major source of recruitment for family owned companies are family members. Any other vacancies are filled by hiring from other firms and college graduates. Companies use personal contacts and newspaper advertisements for first-time supervisors and skilled workers.

The shortage of skilled workers and qualified managers leads to attempts by companies to attract trained workers from other firms through offers of higher pay. This is not good practice since it removes the incentive to train employees. The employer hesitates to invest time and money in training when the recipient may subsequently use his skill to the benefit of a competitor.

Despite the increasing movement of managerial personnel between firms, executive mobility continues to be low, especially among the middle-aged and older managers in most less developed countries. The main reason for low mobility is the high value placed on stability for the individual manager and consequently his slow development within the firm because of the low turnover of staff. A manager who changes firms may be branded as disloyal and opportunistic. This barrier to mobility among firms may lead to insularity preventing the spread of ideas on new technology.

Promotion is usually according to seniority, but priority is also given to relatives or friends of top management in many companies in less developed countries.

With regard to salaries, wages paid to skilled and unskilled workers in the private sector are consistent with those paid to similar grades in the public sector. However, the salaries of managers in the private sector are much higher. Job security and pay are the primary motivating factors for non-managers. Managers cite status recognition alongside financial reward. They consider high status in the material sense of an impressive title, a good car or a well-furnished office rather than in a psychological sense.

In terms of control companies in less developed countries make use of non-quantifiable controls, such as centralised decision making, frequent written reports and management meetings that depend primarily on historical records. The lack of definite objectives for performance standards creates problems for many managers.

Only the finance and production departments of large companies have formal control procedures. In these, they control hours spent on the job, productivity, accident records, progress of production processes, quality and inventories by flow charts, Gantt charts and accounting records.

2.4. Management Practices in Middle East Countries

Several similarities in practices in Middle Eastern countries can be identified in terms of their history, language culture and religion. Badaway (1980) conducted a study to determine the managerial styles and ideologies of Middle Eastern managers. The study involved managers from Saudi Arabia, Kuwait, Abu Dhabi, Bahrain, Oman and the United Arab Emirates. The results showed that no significant differences existed among the six groups, all indicating a classical approach with regard to goal setting, participation and sharing information and objectives.

However the results showed that a modern approach was implemented with regard to an individual's capacity for leadership and the internal control that was exercised by managers over employees.

The study drew attention to the influence of demographic characteristics on the style of Middle Eastern managers, individual characteristics such as age, and years of experience, with the organisational variables of company size and type of department being considered. Significant differences were shown with regard to the age variable.

The middle aged group took a more democratic view of the capacity for leadership than the older group, while the younger group had a more democratic attitude towards sharing information and objectives than the older groups.

Participation in goal setting was most favoured by the oldest groups followed by the youngest, and third, the middle aged groups. A democratic attitude towards internal control was displayed by all age groups, the middle aged group ranking the highest.

Significant differences were also shown among groups according to their managerial function. Marketing and general managers took the most democratic view towards the capacity for leadership, while production managers took a very traditional approach. Production managers strongly favoured sharing objectives and information, but this was least favoured by financial managers. Personnel managers were the only group to register a favourable goal setting with marketing managers having the most classical view in all categories. A democratic attitude towards internal control was displayed by managers of all departments, with production managers being the least democratic.

Badaway (1980) attempted to differentiate the managerial styles of Middle Eastern and Western managers. He stated that the former were highly authoritarian, with organisational power and authority concentrated at the top. Group solidarity, which has its origins in Arab tribal values, probably the most salient characteristic of Middle Eastern society, demands a high degree of conformity, giving a strong authoritarian tone to Arab culture.

Referring to differences between western and middle eastern managers, Badaway (1980) noted that in the area of communication, conducting business in the Middle East is highly personalised, relying more on the cultivation of individual customers and government officials than on creative sales techniques or media advertising.

31

Arabs examine the entire circumstances of an event to understand it, taking considerably longer than Westerners to get down to business. Middle Eastern managers require knowledge of the negotiating party who has to be prepared to take a leisurely social approach with few fast results. This is very similar to the procedures of Japanese managers.

Another major difference in management communication involves the concepts of time and space. At worst, there is no concept of time in the Middle East, at best there is an open-ended concept. Space is perceived as public. Business conversations are usually carried on with different people simultaneously in the same office, similar to a round table discussion.

As stated earlier, Middle Eastern managers put much stronger emphasis on personal contact and less on procedures. Earning their trust and becoming accepted by them are basic cultural prerequisites for developing and retaining effective business relationships.

The idea of personal contact is reinforced by the close conversational distance accepted in the Middle East, allowing close eye contact, one of the most important non verbal clues in this region. Lee (1982) stressed that Middle Easterners place great value on hard work and personal friendship and are highly sensitive to face to face criticism.

In a study conducted by Haner (1980) it was indicated that differences in behaviour help to explain differences in management styles. Managers in sixty nations were ranked. In terms of human values Egyptians were placed thirtieth, Saudis' thirty second, Iranians forty fourth and Turks forty fifth. When the human and physical values were combined, Saudi Arabia was thirty first, Egypt thirty eighth, Iran fortieth and Turkey fifty first.

A conclusion to be drawn from the greater divergence between the material and human values shown for Saudis' provides indications of how this greater sensitivity can be employed in motivating a workforce in Saudi. After basic needs have been satisfied, such as food and security, higher level needs are pursued by the workforce. These are the more abstract motivating factors of social status, esteem, autonomy and self-fulfilment, particular to each individual. The differences of motivation and fulfilment of needs can be used to explain the management style used by local mangers, and which is appropriate to local culture.

Badaway (1980) found that Middle Eastern managers ranked self-actualization as the most important target followed by social status, esteem, security and autonomy.

In his study of management styles, Likert established four models based on particular characteristics of management, such as leadership communication, motivation, decision making, goal setting and control. The four separate styles of management that he identified were: exploitative/authoritarian (system 1); benevolent/authoritarian (system 2); consultative (system 3);and participative/group (system 4).

Authoritarian managers show limited trust in their subordinates which means that there is little upward communication and involvement in decision making. Style 1 managers intimidate and distrust their employees, while "benevolent" managers show limited trust in their employees, but do not permit significant discussion of work issues.

Consultative style managers have complete confidence and trust in subordinates. There is freedom to discuss job-related matters with two way communication, although the power of decision making resides with the manager. Control is by a system of rewards and punishments.

Participative management allows subordinates to interact with their superiors with complete confidence and trust. There is a free flow of communication from one part

of the organisation to another. In this style, group-problem solving sessions and other group functions are able to achieve maximum efficiency and high productivity. Since subordinates participate fully in decision making they are highly motivated to achieve organisational goals. Likert (1976) states the participative style of management would suit profit-orientated, human concerned organisations.

Meade and Whittaker (1967) considered Middle Eastern managers to be authoritarian rather than democratic, tending to discourage participatory decision making, in the belief that a concentration of authority would create both higher morale and productivity.

Yucelt (1984) conducted a study with 59 Turkish managers employed in five companies in Istanbul, of which four of the companies were private, the fifth was a state owned enterprise. Turkish managers were found to operate more in terms of a participative style of management in private organisations. In the state owned organisation, managers leaned more towards benevolent authoritarianism and less toward participatory styles of management. Yucelt concluded that younger, well educated Turkish managers tend to have a participatory attitude rather than an authoritarian one.

It would be valuable to consider here the influence of the international quality management movement has influenced the Middle East. There has been little research in this area to date, in relation to the Middle East in general and Saudi Arabia in particular, and this has been commented on by several researchers: for example, Yucelt (1984) states that

> *"Studies dealing with management practices in developing countries are virtually non-existent. Whatever is available for one country or one industry, specific studies demonstrate very little managerial orientation."*

Similarly, Anaston, Bedos and Seaman (1980) indicated that

34

"Few studies have been conducted on the development of modern management practices in the Kingdom of Saudi Arabia."

There has been some concern over the understanding of modern quality management techniques such as quality circles, but it seems that this is still in the early stages of development. More details of this will be discussed in chapter below, on how Saudi managers respond to Japanese management techniques.

2.5. Management Practices in Saudi Arabia

The Kingdom of Saudi Arabia has only recently come to prominence in the sphere of international business, as a result of it's oil production capacity, and few studies specific to that country have been conducted with reference to modern management practices.

Ali and Al-Shakhis (1991) felt that:

> *"Saudi Managers are conformist, prefer stable lives, are highly concerned with job security and display a strong preference for a consultative management style."*

This is contradicted by a study conducted by Anaston, Bedos and Seaman (1980) which indicated that Saudi management is highly centralised with no opportunity for managers in the middle and lower levels to make decisions related to their areas of authority.

In his study of the management environment of Saudi Arabia, Alaki (1979) found that the Saudis were unwilling to observe strict rules and regulations.

Ali and Al-Shakhis (1991) suggested that families play a central role in Saudi life. In a comparison with India it was found that Saudi Managers showed a stronger adherence to their family role than their Indian counterparts. The latter were interpreted as highly individualistic compared to Saudi managers.

2.5.1 Managerial Functions

Most information on Saudi management practices deals with management functions such as planning, organising, staffing, leading and controlling, based on the experience of international managers. The study of firms in Saudi Arabia made by Anaston, Bedos and Seaman (1980) attempted to analyze these managerial functions.

2.5.1.1 Planning

The Government of the Kingdom of Saudi Arabia operates a five year plan for its departmental programmes, but planning in the private sector is usually limited to the short-term (one year) and the changing business environment lacks the stability and predictability necessary for accurate forecasting. Sophisticated planning is not considered essential for a company to be successful due to the abundance of business opportunities and the large profit margins available, and the booming economy encourages speculation.

The Saudi manager's approach to planning is less thorough and systematic than in the west. Information is gathered through business contacts and subjective judgements made about future trends. This assessment is then used to establish priorities. These practices carry a high degree of uncertainty forcing the manager to allow for a large margin of error and to allocate slack time in schedules to achieve objectives.

The overall objective of the Saudi manager is to achieve self-sufficiency in operations. The means by which they attempt to accomplish this objective include carefully anticipating future needs reducing their dependence on unreliable suppliers and limiting future long term agreements.

2.5.1.2 Organising

Saudi managers' main interest is in what is being done rather than how it is being done. The increasingly democratic attitude of the younger managers reflects the outlook of egalitarianism and leads to more decision making by processes of consultation and consensus. Therefore, instead of the pyramidal organisation of the West the typical Saudi company structure will be relatively flat with a broad spread of control.

The rapidly changing business environment of Saudi Arabia together with the shortage of skilled local managers requires employees to be sufficiently flexible to accommodate frequent cross-delegation of responsibility among managers. Thus although their position and function is defined, managers must be prepared to assume general responsibilities.

This was emphasised by the Saudi senior manager who was Head of Petromin's International Trade Department, who was quoted by Arbrose (1982):

> *"We do not have the rigid system of functions and controls you find in western companies. Our purpose here is to get the work done. There is not such a strict separation of responsibilities that if one guy is not here, his work stops. Someone else steps in and does it."*

2.5.1.3 Staffing

Saudis rely on growth through the contacts which new employees bring with them. Business success in Saudi Arabia depends on personal relationships, so the employee's personal influence and his ability to develop new contacts is vital. This emphasises the importance of skills in interpersonal relations rather than technical competence.

Recruitment tends to be based on affiliation, friendship and right of birth. The Saudi Manager's ability to develop a group for a given task is limited by the tradition of loyalty to family and friends. It is often difficult to terminate employees who do not perform up to the standards required by the position and effectively contribute to the business.

While human resources management in the United States has evolved over several decades, in Saudi Arabia and other Arab countries, many policies have been developed within a short time. The Saudi method of recruitment appears to be a synthesis of the US approach (personnel are selected to fill positions previously defined by management) and the European approach (individuals are selected first and then the position is tailored to their capabilities).

The shortage of qualified mature personnel has made it necessary to recruit expatriate expertise. These come from various social, religious, linguistic and educational backgrounds. In 1980, Aramco. (the Arabian-American Oil Company) had a total of 46,876 employees comprising 26,321 Saudi Arabians 4,651 Americans and 15,898 other nationalities (Facts and Figures 1989). Personnel policies need to be developed taking this into account.

2.5.1.4 Leading

Saudi Arabian companies tend to be patriarchal, owned and managed by a particular group of family members where the decision making process is concentrated. The need to refer decision to those in authority derives from the traditional respect for elders and those in positions of responsibility based on Islamic law and tribal values. This process requires a consensus to be reached, and it creates an atmosphere of open communication and a sense of commitment among company managers, but it slows the decision making process.

Leadership qualities are essential for a manager to be successful. The pride and self-respect inherent in traditional Bedouin society requires the instruction and direction of employees to be subtle and diplomatic. A Board of Directors meeting, for example, takes on a special significance in Saudi Arabia because participants are sensitive to who is at the meeting and how time is allocated among the issues to be considered.

In a similar way, the motivation of employees must be pursued diplomatically because direct exertions of authority offend traditional feelings of self-respect, and may be counter productive. The most effective method is to appeal to the employee's ego and sense of pride, such as offering incentives or providing the opportunity for social recognition from peers.

2.5.1.5 Controlling

Systematic control devices operated by Western management have not been implemented by most companies in Saudi Arabia. This is due to the abstract nature of control in Saudi society, the lack of personal shame for failure (since Islamic law requires each individual to work hard up to his capability and capacity, but not

beyond this), and companies find that high profit margins have allowed inefficient organisations to continue to be profitable.

However it is being realised that when companies become very large, a strong need arises for control systems. This is illustrated by the Triad Holding Company owned by Adnan Kashoggi, which reached a critical point where the absence of a control mechanism prevented him from effectively managing his expanding business empire (Oates 1976). When a company exceeds a certain size the tradition control mechanism of personal influence fails.

Ali and Swierez (1985) undertook a study to determine management styles in Saudi arabia. It was found that consultative styles were most favoured. This preference, as noted, reflects the influence of Islam together with tribalistic values and beliefs. Islam takes a positive view towards open discussion, it being stated that:

> "This reward will be for those... who conduct their affairs with consultation among themselves."

Similarly it is the practice of the tribal society that members of the family and kinship groups should be consulted on matters important to their welfare.

Ali and Swierez found that participative management style also existed in Saudi Arabia to some extent, attributing this to Western influence through educational and business contacts. In contrast it was found that Saudi managers are not oriented to a delegative style. They suggested that this is a result of the manager's awareness of the affairs of business, the tendency to concentrate decision making and the personalised manner in which business is conducted.

Saudi employees seem to show little commitment to their organisations. Al-Meer (1989) attributed the relatively low level of commitment expressed by Saudis to three factors: ninety per cent of Saudi employees have no formal contract, which allows them more freedom of movement between organisations; they prefer government employment, as the working hours of modern companies are longer; and the massive program to train Saudis for a wide range of opportunities has encouraged them to look for better jobs, accelerating mobility, especially among educated Saudi's.

It seems that Saudi managers are loyal to their supervisors rather than to their organisations. This was emphasised by Wright (1981) who suggested that managers in Islamic organisations seldom delegate authority to their subordinates and that managers are loyal to their immediate superiors rather than to their organisations.

2.5.2 Production Management Practices

Several practices can be discussed in this area. Practices concerning quality management will be concentrated on, as the purpose of this research is to review the transferability of Japanese and western management techniques to organisations working in the Saudi petrochemical industrial sector.

Horn, Grubb-Ingram and Masson (1987) refer to three important practices in production management which are: product design, suppliers' performance and production operation.

Due to the lack of relevant information relating to production operation in Saudi Arabia, the research will discuss only some practices relating to product design and suppliers' performance.

2.5.2.1 Product Design

In product design both quality and price are important for Saudi customers. Neither a poor quality product at a low price nor a good quality at a high price are considered acceptable. Yavas and Tuncalp, (1984), referred to products from the United Kingdom. These are known in Saudi Arabia for having attractive styles, and offering prestige value compared with other products. However, the high price relative to similar designs renders them unfavourable to a majority of Saudi customers.

Ali and Al-Ali (1991) emphasise the sensitivity of Saudi customers in demanding a high quality product at a reasonable price. They found that Arab managers consider the quality of United States to be similar to those of the Japanese products, but the prices of the former are much high than those of the latter.

While price and quality in product design are important, goods must be appropriate to local needs. Yavas and Tuncalp (1984) referred to attempts to sell United Kingdom made Clark brand shoes to Saudi Arabia: although comfortable, the leather and rubber content render them unsuitable to the hot, humid Saudi climate.

The same researchers showed that the United Kingdom has been consistently ranked behind Japan, the United States and Germany in the list of exporters to Saudi Arabia. The loss of its dominant position in Saudi Arabia can be attributed to the United Kingdom's failure to match its major competitors' marketing expertise and skills in continuously adapting to the needs of the local customers.

2.5.2.2 Suppliers' Performance

Selection of suppliers is judged on variables of product quality, price and support services provided although the manner of conducting business, after sales service, timely delivery, transportation costs and personal relationships are also considered.

Research carried out by Yavas, Cavusgil and Tuncalp (1987) showed that Saudi managers evaluate Japanese suppliers higher than United States, United Kingdom and Taiwanese suppliers. The Japanese were ranked first on many criteria, specifically ease of placing an order, advertising support, attractive styles, the provision of satisfactory repair and maintenance services, timely delivery, liberal credit policies, the suitability of products for local customers, the reliability of long-term supply arrangements and the development of personal relationships.

Suppliers from the United States were ranked just behind the Japanese in terms of style, repair and maintenance services, convenience in ordering, ease in use and their ability to assess the market accurately. Two distinct advantages for United States suppliers were their high prices and the cost of importing goods.

British suppliers were third, as goods were seen as lacking adaptation to the needs of local customers and prices were considered too high. Taiwanese suppliers were ranked lowest due to the poorest overall image of quality, financial risk, advertising and after sales service.

2.5.3 Summary and Conclusion

The structure of management systems in Saudi Arabia is influenced by the cultural traditions and values of that nation, based on both the religious values of Islam, and the cultural traditions of both the sedentary population and the Bedouin. In addition to these factors, the population seems to be in a process of change, as the younger generation of managers are accepting and learning the practices of the west in a way which could not be expected of the elder generation. The Saudi environment is very different from that of the west, and of Japan; and this may suggest some problems in their management practices which may be inappropriate to that environment.

Comparisons have been made, and contrasts drawn, of the industrial organisation and managerial systems of these countries. There is an acceptance among Saudis that more efficient management performance will encourage the economic prosperity, independent of the oil resources, that is sought by many Saudis.

There are unquantifiable differences between how Arab managers, and Saudi managers in particular, operate such as the short term nature of forward planning and the paternal aspect of management in family-oriented businesses. Although indigenous management practices in developing countries are generally seen as less efficient than those in Japan and the west, there are indications that Saudi Arabia is making considerable effort to learn techniques from the industrial companies, particularly in the petrochemical industrial sector, and these improvements in management systems can be highly effective.

Having studied the management practices in Saudi Arabia, we need to look at the experiences of japanese and western companies in transferring their management practices abroad and to Saudi Arabia in particular. This is studied in greater detail in the next chapter.

CHAPTER THREE

The Transferability of Japanese and Western Management
Practices Abroad

3.1 Introduction

In this chapter an investigation will be made into the concept of management and its relation to local culture and there will be a review of both western and japanese experience in transferring their management practices abroad; The experiences of Saudi managers in adapting to both western and Japanese management practices are also considered. A summary and conclusion is provided at the end of the chapter.

3.2 Definition of Management

In a study of the transferability of Japanese and western management practices to the petrochemical industry in Saudi Arabia, it is essential to have a clear understanding of the notion of management. Because "management" as a word can have several different meanings and interpretations, its precise meaning reflects the interests and attitudes of the person using the term.

Davis (1971) suggests the meaning of the term depends on three factors: the language and disciplinary orientation of the user; the evolution of the political and economic system; and the stage of development of the country. Koontz and Weihrich (1988) emphasise Davis' view in their definition of management as *"the process of designing and maintaining an environment in which individuals, working together in a group, accomplish efficiently selected aims"*.

The most useful definition for our purposes is the three part explanation offered by Lucas (1978). He stressed that the main characteristic of management is the integration and application of the knowledge and analytic approaches developed by many disciplines. The task of management therefore is to solve problems with techniques tailored to the situation while defining a framework encompassing all aspects of organisation; in other words, "management gets things done through people".

An alternative definition involves examining the values and mental processes of the mangers within an organisation. From this viewpoint, management is the integration of a balanced variety of ways of thinking. Each manger's perception of his role is based on his needs, attitudes, experiences and environment.

A third method of defining management is to identify those functions that are performed by managers within an organisation. This is the functional approach used by Massie (1971). Seven functions are identified: decision making, organising, staffing, planning, controlling, communication and directing.

Lucas' definitions seem the most concise and useful in the definition of the role of management for the purposes of this study.

A related question to what is meant by management is whether it is regarded as an "art" or a "science". *Management: Art or Science?* Koontz and Weihrich, (1988) discussed this problem and came to this conclusion: "managing as practised is an art; the organised knowledge underlying the practice may be called a science". While working within the realities of a situation (art), managers can improve their performance by using the organised knowledge and information about management (science). The two aspects are mutually supportive; in the same way that a physician working without the advantage of scientific knowledge would be little more than a witch-doctor, similarly an executive who attempts to manage without this accumulated knowledge is reduced to relying on luck, intuition or his own experience.

They also stressed that in managing, as in any other field, practitioners must rely on the sum of knowledge and experience available for guidance; the only alternative is simple learning by trial and error. The accumulated knowledge can become the basis for scientific methodology - establishing facts and relationships through observation, classifying and analyzing data, and searching for causal relationships. Once these generalisations or hypotheses are tested for accuracy and are confirmed by experience they gain a validity and a value in forming predictions, and they become known as principles.

3.3 Schools of Thought about Management

Having considered the definition and the nature of management, we now consider the concept of management, as it concerns the transferability of management techniques between different cultures. This subject has been reviewed by Lim (1987), who identified three major schools of thought on this subject, as follows:

1. Management practices have a universal applicability in different cultures (universalist view);

2. Management is culture based and it may not be transferred from one culture to another becuse of the difference in the cultural environment (relativist view);

3. The influence of culture is discernible from the way in which countries cluster according to similarities in cultural traditions (group view)

The last theory is a combination of the other two views as it seeks to identify groups of countries by considering traditional cultural similarities, such as Nordic-European, Latin-European, Anglo-American, Developing Countries and Japan.

The universalist view is represented by several theorists, such as Harbilison and Hyers (1959), Koontz and O'Donnell (1968), Richman and Cooper (1972), and Sekeman (1981).

Harbilison and Hyers (1959) studied the management practices in twenty three countries. They suggested that the development of management relies on the use of recognisable formal management structures, and that this is true of both advanced and newly-industrialised countries. They suggested that industrialisation causes a specialisation of functions within industrial organisations.

However, Lim (1987) identified a possible weakness in their analysis; some of their analysis may be flawed by being based, at least in part, on studies conducted by independent researchers at different times and using different data collection procedures. This is likely to affect the accuracy of the results, as the surveys would have used different sample sizes and the possible inconsistency of the data which resulted, having been collected at different times by different researchers.

Koontz and O'Donnell (1968) suggested that managers around the world tend to face very similar problems and difficulties. The differences are only an expression of different perspectives, levels of importance, and different capacities:

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

In a later work they 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 has been criticised for failing to consider the problem of relative efficiencies between firms operating in different external environments. For example, Koontz and O'Donnell (1968) suggest that there are generalised principles that managers use in carrying out their responsibilities. If an organisation's major functions are looked at objectively, and fundamental principles of good management are applied, this will usually result in a higher efficiency in the firm and its management. However, this approach relies on fundamental similarities in the environment to achieve comparable improvements, as using a similar approach in different industrial organisations with different external environments should not be expected to result in the same improvements in efficiency.

Various studies of management practices and theories have suggested that management practices are culture bound. Some theorists of this school include Gonzales and McMillan (1961), Oberg (1963), Negandhi and Estefen (1963), Farmer and Richman (1970), Hofsted (1980), Muna (1980) and Ali and Al Shakhis (1985).

Gonzales and McMillan (1961) said that:

> *"American management experience abroad provides evidence that our uniquely american philosophy of management is not universal, but rather is a special case."*

Authors such as Farmer and Richman (1970), Drucker (1974), Roy (1977) Muna (1980) and Hofstede (1980), stressed that management practices and their effectiveness can vary considerably from country to country, and these differences are caused by variations in culture and beliefs.

Oberg (1963) studied problems facing 106 managers and 51 executives from the USA and Brazil respectively, and found that the two groups had few problems in common. He states:

> *"the skills that lead to managerial success in the US may not be the skills that lead to managerial success in Brazil."*

Alston (1986) believed that it is impossible to separate management style and the culture from which it springs. For example, Japanese managers will rely on the shared cultural traditions and social customs to improve levels of worker productivity in modern industrial sectors; the management structure is supported by traditional values, and in this way it reinforces them.

Kanungo and Jaeger (1990) stressed the difficulty in transferring management practices from one culture to another when they suggested that managing an organisation requires a thorough understanding of the dynamic relationships within the socio-technical system (the internal environment) and the relationships of the external environment with which the system is in constant interaction, as it is both receiving influences and affecting the environment itself. Since the external environment in developing countries is different from that of the western industrialised countries, the management theories and practices of the developed countries may not be appropriate to the developing world.

"Uncritical transfer of management theories and techniques based on western ideologies and value systems has in many ways contributed to organisational inefficiency and ineffectiveness in the developing country context."

A criticism of this second school of thought is that culture is used in an all-inclusive manner to explain differences in comparative management styles. Many management principles may be transferable into different cultures or environments, although it is unlikely that all management principles are truly universal for all known cultures. Another important criticism of this school is that culture has broad meanings which could be understood in many ways.

This was stressed by Ajiferuke and Boddewyn (1970), when they suggested that:

"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 widely divergent array of conceptions."

The third theory states that the influence of culture is discernible from the way in which countries cluster according to similarities in cultural traditions. For example, Haire, Ghiselli and Porter (1966) investigated the attitude of 3,642 managers in fourteen different countries. He identifies five major culture groups: Nordic-European (Norway, Denmark, Germany and Sweden); Latin-European (France, Italy, and Spain); Anglo-American (US and Britain); developing countries (Argentina, Chile, and India); and Japan. His findings show that correspondence of managers' attitudes are associated with linguistic and geographic similarities.

A study carried out by the MOW international research team (1986) identified the meaning of work across eight different countries. They found different meanings of work are provided in the different countries due to cultural influence, not only in the importance attached to work, but also in the function that it has in their lives.

Clarke and McCabe (1970) surveyed 1339 managers from many different types of organisations in Australia and found the managers to be more similar to British and American managers than any other group.

Of the three theories, the first suggests that there are universal principles of management, and de-emphasises the impact of culture, the second emphasises the local culture to the exclusion of general principles, and the third recognises the impact of more general cultural influences.

The remaining parts of this chapter will look at the experiences of western and Japanese organisations in transferring their management practices abroad, in particular looking at Saudi Arabia. The next section deals with the experience of western firms in transferring their management pratices to the developing world.

3.4. Experience of Western Organisations in Transferring their Management Practices

In an ideal world there would only be one style of management that applied throughout all countries equally effectively through the world.

Kanungo and Jaeger (1990) stressed that most widely dispersed management theories and techniques have their origin in the industrialised nations of the west. Many organisations in these industrialised countries have benefited from their prescriptions. As a result, western management thought and practice have turned into "sacred cows" for industrial development. Countries in the developing world are advised, and feel themselves, that they must strive to adopt western thought and practices to achieve prosperity within the shortest possible time. It can be asked whether a particular set of management techniques and practices, such as those of the United States or the United Kingdom, are genuinely effective in another environment such as that of the developing world.

The experiences of some countries suggest that this is not true, notable examples are India and China. Yet management faces similar problems throughout the world, so why does a particular style not always succeed in facing these problems?

Good management requires an understanding of both the internal environment of an enterprise, and of the dynamic relation of that environment with the external environment, the world within which the enterprise operates. It is important that good management must relate well to its environment.

3.4.1 National Characteristics

An analysis of the particular character of different nations was carried out by Hofstede (1980). He showed that different nations could be attributed a national character which would suggest the way in which members of the community considered their relationships in terms of management practices.

The four characteristics identified by Hofstede were: power distance (the acceptance of unequal distributions of power within institutions and organisations); uncertainty avoidance (the reaction to the threat of uncertain and ambiguous situations, leading to rules and protective structures); individualism-collectivism (the extent of self-preservation and group loyalty); and masculinity-femininity (the assertive and acquisitive vs the intuitive, the spiritual and the caring).

The implications of these characteristics will indicate how individual members of their populations should be handled in work situations. For example, in a country of high power distance, an autocratic management style may be more effective than a democratic style, whereas in a country with a lower power distance, workers will be more motivated by feeling that they are involved in the decision making process. Similarly, in a country exhibiting high uncertainty avoidance power structures should be highly formalised, as the population will respond better to formal rules and roles. In an individualistic society, individual performance should be recognised, whereas in collectivist societies, such activities, which might harm the interests of the group, would be discouraged; similarly, in such a society, consensus decision making would be more effective than executive orders.

Hofstede referred comparatively to Austria and the United States, in connection with Freud's theories of sub-conscious motivations. Austria is assessed as lower in power distance, higher on uncertainty avoidance, lower on individualism and considerably higher on masculinity. From the first two there is a need for a strong and powerful superior (high power distance and uncertainty avoidance) but this also leads to a need to work hard to satisfy the uncertainty avoidance - Austrians work harder to satisfy their own needs, not because they are ordered to. In contrast, the US has a high individualism, which means that acts tend to be justified in terms of self-interest, and because of the expectancy of reward. The result of this is the great popularity of "the achievement motive", which relies on a willingness to take risks (low uncertainty avoidance) and a recognition of results based performance (masculine).

By giving each of forty nations a ranking in terms of each of these characteristics, Hofstede suggested that it was possible to group nations in terms of their similarities of behaviour, and to see where the management of one country will be easily assimilated and where there is potential for problems. For example there were notable similarities in predominantly english speaking nations, such as the United States, the United Kingdom, New Zealand, Australia and Canada, who scored low power distance, weak uncertainty avoidance, high individualism, and tended towards masculinity. Other nations had different patterns, for example Iran, Thailand, Taiwan and Pakistan had higher power distances (compared to the US), higher uncertainty avoidance, higher femininity and higher collectivism.

The implication of this is that these relative rankings should be considered when dealing with a management problem in a foreign setting, for example motivation; the humanization of work practices (making work more intrinsically interesting) takes the

form of job enrichment in the US, allowing individual performance, but in countries such as Norway and Sweden becomes restructuring work into group work, which takes account of the higher feminine ranking of the north European countries as opposed to the high masculinity rating of the United States.

Management methods may have to be adopted to the particular local environment. For example, a common management practice in the US is that of Management by Objectives (MBO), the presuppositions of which are that subordinates are independent enough to negotiate with their superiors (i.e., low power distance), both workers and superiors are willing to take risks (weak uncertainty avoidance), and performance is important to both (high masculinity), which is close to the profile of the US; however in Germany, a higher uncertainty avoidance culture and with a greater emphasis on collectivism, this practice was remodelled to become Management by Joint Goal Setting, with a greater stress on team objectives and a greater level of justification and formalisation of structures, as expected from the national profile. In France, this system has been discredited because of the lack of highly centralised and personalised power structures, which are needed by the greater power distance rating for France.

3.4.2 Cultural Differences between Developed and Developing Countries

According to Jaeger (1990), the characteristics of the developed world, in particular the Anglo-American countries, are low power distance, low uncertainty avoidance, high masculinity and high individuality. In developing countries, such as India and the Philippines, there is generally higher power distance, higher uncertainty avoidance, higher collectivism and higher femininity.

These ratings suggest that in the developed countries there is an acceptance of less formal and autocratic power structures, a willingness to take risks, a strong recognition of success by performance criteria and a recognition of the individual and his rights and responsibilities.

In contrast, the people of the less developed countries tend to feel less in control of the local environment than the developed countries, and have little appreciation of causal relationships, resulting in a greater passivity and fatalism in facing problems; they have strong views on malleability and human potential, meaning that there is an acceptance of fixed roles; they tend to be focused on the past or the present, rather than the future, which leads to an unwillingness to accept new working practices; a further difference is that of being action-oriented, as in the developed countries, with an emphasis on measurable accomplishments and an active stance in dealing with problems, or being-oriented, where the focus is on the quality of life.

A difference between the cultures of these groups of nations is in the mode of thinking, in that the developed countries tend to use abstractive thinking, using abstract principles, absolute rules and procedures in guiding behaviour; in the developing countries there is a

tendency not to use such thinking, relying more on contextual factors in guiding behaviour rather than appeals to abstract principles.

These differences in the work cultures of different nations are shown in various ways: their attitude to causality and control (the western world has a recognition of the influence that individuals have over their environment, whereas the people of developing countries tend not to see themselves as being in control of the world around them); the beliefs about human potential and flexibility also affect the work culture of a country, as the developed countries view their members as having a virtually unlimited potential, while in the developing world people have strictly limited roles and opportunities - from this, it has been claimed that Theory X management (carrot and stick) is more effective in the developing countries, while Theory Y (participative management) is better suited to the developed world. In the developed world, an active attitude to a given task is encouraged (a reflection of high masculinity), whereas a passive approach is to be found in the developing countries. Further differences between the work cultures of these societies include pragmatic success criteria in the west, as opposed to reliance on traditional values in the less developed countries, and this is coupled with paternalistic and authoritarian attitudes to organisations, while the developed nations prefer participative models.

There are three ways in which the work culture of a country will influence the behaviour of an enterprise: the economic and technological infrastructure, the political and legal arrangements, and the socio-cultural; organisations must be sensitive to the constraints and opportunities in each of these areas. Of these areas the last is probably the most significant as it deals with the resources of the organisation and the external environment at the lowest level, and a comprehensive understanding of this aspect is vital for effective management of the available human resources.

These differences in culture lead to a tendency to think in a particular manner among managers in developing countries, which is typically very tradition based, focusing on short term goals rather than the longer term planning of western management, and it affects the goal setting, the level of control of quality, the financial system and the effectiveness of management.

3.4.3 Western Experience of Failure in Transferring their Management Practices

Two countries can be studied that have shown some problems in transferring a traditional western management system to newly industrialising nations: China and India.

Zhuang and Whitewell (1990) showed that China faced difficulties in adopting western management practices. They showed that there are three important aspects of the chinese economy which cause this: the nature of ownership, the prevailing planning system and the relative importance of production and profit.

Three ownership categories exist in China: state enterprises, collective enterprises and individual enterprises. Due to their dominant position in the economy, the state enterprises exercise control over collective and individual industries, as 81% of domestic output occurs through state controlled enterprises. The attitude of managers within the nationalised industries reflects a totally different value system to that which would be recognised by managers familiar with western systems: the economic system is dependant upon centralised planning rather than the laws of supply and demand that dominate developed economies, and the priority for managers is the fulfilment of quotas rather than seeking profitability or maximising efficiency; suppliers can do little to control the profitability of their enterprise, as prices and supplies are not under their control, and there is little to encourage an entrepreneurial attitude among the indigenous management.

An interesting illustration of how the chinese react to western management practices is the study made by Lindsay and Dempsey (1985), in which they showed that in their reactions to western management exercises in group decision making and group criticism, they produced behaviour that *"would be inappropriate or ineffective in US business meetings"*, such as in the group decision making exercise, time was taken in delegating a leader of the group, followed by each member of the group making a speech without criticising the previous speakers, no discussion in the western sense, and the nominated leader making a decision that would be unanimously accepted - this behaviour was not simply frequent but virtually universal.

Similarly, their reaction to sessions of group criticism was as if these sessions were for punishment, rather than therapeutic, as is the norm in the US, and drew little response to requests for feedback.

These failures of the chinese were believed to be a result of their traditional values, such as the deference to authority, the fear of being too outspoken and the avoidance of public conflict. There would be a need for extensive cultural familiarisation either by the incoming management or an even greater re-education for the indigenous staff.

It is interesting to observe that there are a range of similarities in traditional chinese culture and the requirements of communist ideology, such as loyalty to family and clan is replaced by loyalty to the party, few opportunities for social movement is replaced with lifetime employment, a feudal aristocratic society is replaced by a semi-feudal party structure (only members of the party can be appointed managers). A significant area that caused problems for the students in the study was that of participation in decision and debate, as tradition requires a deference to authority and an avoidance of conflict, while

communism seeks to encourage participation in decision making. It is the merging of these traditional and modern values that leads to the complex behaviour patterns of the chinese students - *"the depth and intricacy of modern chinese culture"*.

In India, there are problems in applying western management practices caused by the rapid conversion of the indian economy from being agrarian-based in the early nineteenth century to being an industrialised economy in the later nineteenth century. Parikh and Garg (1990) identify four significant shifts in attitude caused by the upheaval resulting from industrialisation: a shift in agrarian relatedness (i.e., the sense of meaning for the individual and of belonging to a group), a shift in role location (the conventions of behaviour in work and thus in society), a shift in technology (as machines were required to carry out much of the work that would traditionally be done by men and animals, leading to resistance of new technologies and a feeling of incompetence) and a shift in terms of the size of operations and relatedness (as more specialist functions were needed, the managers responded by forming personal empires of control, and task relations were replaced by affiliative internal politics).

They also identified a series of value dilemmas faced by indian managers, which affected their behaviour, such as: defining a role and only accepting listed responsibilities as opposed to traditional society in which an individual has a variety of tasks to fulfil, which leads to defensiveness and inertia; questions over the role of management, given that there is a lack of functional and professional authority caused by feelings of inferiority to superiors, which leads to a marginalisation of the individual manager, and the using of resources to play political games rather than achieve tasks; similarly, technology for achieving particular results is often available but is not deployed effectively as it is given a personality, for example computers may be expected to repair themselves, etc.

We see therefore that there is a significant problem in the application of US management styles in some developing companies, as the indigenous population fails to respond to the structures in the way that would be expected in the US. In India there is a situation where many bad management practices of the nineteenth century have been reinforced by twentieth century managers who do not recognise the resulting organisational inefficiency.

3.4.4 Western Experience of Success in Transferring Their Management Practices

Given that in some countries with developing economies there have been problems in adopting western management practices, we can ask whether there has been any indications that western techniques do work. There have been some studies of this.

The first example of successful imposition of american style management is in the Philippines. A study by Flores (1972) into the comparative performances of subsidiaries of american companies and of locally owned and managed companies showed that although the local companies had adopted some standard western management techniques, their implementation was not as effective or as sophisticated as in the subsidiaries.

Both sets of companies used standard american management practices, such as setting targets and goals, departmentalisation by product, function, etc and controls over quality, costs and budgets, but the US subsidiaries operated these policies with a greater degree of precision, scope and effectiveness, and the difference in the performance was affected by the way that these practices were applied to the Philippines environment. The subsidiaries were seen to emulate the practices of their american parent organisation in spite of the local cultural conditions, which led to a greater degree of success in terms of profitability and growth.

Both sets of managers also faced similar problems when dealing with the external environment, such as the recruitment of qualified personnel, and both sets of managers referred to local cultural traits as the main obstacle to carrying out assignments, as local employees lacked a sense of urgency, they lacked qualities such as aggressiveness and initiative, and tended to accept a lower standard of quality.

The US subsidiaries were more effectively managed; this was partly due to better use of technology and financial assistance from the parent company, but this was not considered the sole reason for their generally superior managerial performance, which was due to the difference in managerial practice.

Another study by Negandhi (1971) compared 47 firms which were subsidiaries of companies from the United States with 45 local competitors in Argentina, Brazil, India, the Philippines and Uruguay. The study looked in particular at the areas of planning, organisation, manpower management, control, leadership, employee morale, and turnover.

This study suggested that the superior quality of management in the subsidiaries led to superior performance of the companies and their management. The particular areas where the US firms out-performed their local competition were in terms of long term planning, organisation, manpower policies, control over quality and budgets, and leadership.

One of the most significant differences lay in the area of planning, where many US firms were operating long terms plan over five years or more, despite the variable factors in the local environment, and this gives a greater sense of direction to the company, as opposed to the short term perspective of their local competition.

Similarly there was a higher degree of delegation and decentralisation, and a greater level of democracy in the management of the US subsidiaries. All these factors were seen as significant differences between them and their competitors.

A reported drawback of the american management styles was the lower employee morale in the subsidiary companies, which was a result of the local conditions. This led to a significantly greater incidence of absenteeism.

Some local firms were seen to be matching the performance of their US competitors, in all five of the countries studied, which shows that they are capable of adoption and using western management processes, and that this improved their managerial performance and effectiveness.

Neghandi's conclusion is that the local environment and culture does have an impact on managerial effectiveness, especially in areas which require interaction with the local employees. Other areas, such as planning, organising and handling higher level employees were not particularly affected by the local environment.

Although local culture does affect some areas of management, many american practices such as long term planning, low levels of organisational structures and close controls over quality and budgetary factors are not constrained by environmental and cultural considerations.

Negandhi's conclusion was that a manager's effectiveness will be determined by his constant interaction with the environment, and how well he can mould and adapt to environmental constraints which will deeply affect his company's effectiveness.

3.5 Experience of Japanese Organisations in Transferring their Management Practices

3.5.1 The Style of Japanese Management

The traditional meaning of "Japanese management techniques", as perceived by the non-japanese, has been built up by both those who have been employed by Japanese companies and those who have studied their management methods.

Abegglen (1958) compared western and Japanese management systems and found that the most recognised characteristics of the Japanese management system were: lifetime employment, group responsibility, decision making by consensus, recruitment of new graduates from school, seniority based wages systems and promotions from within the organisation.

In a comparative study of 227 american executives of companies in the Fortune 500 firms and 255 executives in similar Japanese companies by Kagona, Nonaka, Okumura, Sakskibara, Komatsu and Sakashita (1981), it was found that corporate goals, policies and values filtered down to a greater extent among the Japanese companies. The Japanese firms were found to exercise greater control through internal corporate values, evaluated managers' social behaviour and team effort far more than american firms, and promoted company based careers, job rotation, long term employment, promotion by age and infrequent performance reviews.

Ouchi and Johnson (1978), Ouchi and Jaeger (1978) and Ouchi (1982) suggested that group decision making and responsibility is the most important characteristic of the Japanese management practices.

Japanese management has also been characterised by Negandhi, Eshghi, and Yuen (1985) as having a more "generalist" orientation, as opposed to the "specialised" orientation of western management systems.

In a later work conducted by Lim (1987) the most recognised features of the Japanese management system included: lifetime employment, seniority based wage systems, non-specialist career paths, decision making by consensus, infrequent and implicit performance evaluation and paternalism.

3.5.2 Success in Transferring Japanese Management Practices

3.5.2.1 Theory Z

Ouchi (1982) showed that group based characteristics, such as collective decision making and responsibility, and a holistic concern for workers, were used in several organisations operating in the US with markedly different management styles from the traditional American style, such as IBM, AT&T, Hewlett Packard, Kodak and Sony. Ouchi called these organisations "Type Z" or referred to them as using "Theory Z" management techniques. Ouchi assumed this theory to be global and applicable to any large organization in any industrial nation. He argued that the corporation must motivate its' employees by involving them in their work and the corporate structure.

In other words, he suggests that the corporation must assume a moral role in society which will behave as a force for good and will promulgate values that will influence employees to behave in a manner that will enhance the order and stability so needed in mass society. This view had been emphasised before in the work of Durkheim (1923) where he argued that social stability is very important for the workforce and that it cannot be achieved

without a "moral power" which all can respect and whose social rules all can obey. He stated that:

> *"To constitute, elaborate, coordinate, and apply moral power and its social rules, an industrial clan is needed."*

Ouchi (1982) identified eight specific characteristics of Theory Z management: lifetime employment, slow promotion and infrequent evaluation, non-specialised career paths, implicit control mechanisms, collective decision making, collective responsibility and a holistic concern for the employee. These factors lead to the creation of a particular atmosphere for work and foster close cooperative relations between workers and between workers and management.

Such a work philosophy has strong links with Japanese culture and this theory is associated with Japanese companies. Ouchi says that:

> *"Cultural imperatives - as well as corporate philosophies and fortuitous economic and historical influences - have fostered numerous industrial clans (in Japan)."*

Sullivan (1983) discussed this theory and argued that although in the west there is a different cultural tradition and there has to be a firm management decision to develop a corporate philosophy and accept the values of an "industrial clan", this does lead to a greater corporate identity and to increased involvement, trust, satisfaction and productivity.

There are some objections to the premises of Theory Z, such as Clark (1979), who suggested that lifetime employment was more of an ideal than an industrial reality. Clark makes three major criticisms of Theory Z: that the workers' involvement is dependent on local cultural and labour conditions rather than for the positive reasons Ouchi identifies;

that company loyalty is only displayed by a select group of managers and supervisors (specifically, well educated, middle aged, and male), who do enjoy the benefits of the system and do respond as anticipated; and that there is less sense of community among employees than might be expected in Japan, as a survey by Hofstede revealed that there was a high power distance and that *"egalitarianism simply does not exist as an important value in Japan"*.

3.5.2.2 Quality Circles

One element of Japanese management that has been seized on by western management is the use of Quality Circles. This was an idea originally drawn up in the west, and developed in Japan during the 1960s. It involves small groups of employees who volunteer to meet regularly to solve job-related problems in their work areas.

Dale (1984) showed that this technique had been successfully applied in the US. Interest in these practices from the UK was growing quickly, as was shown by the formation in 1982 of the National Society of Quality Circles, to encourage the healthy development of quality circles in the UK by using the experience of individual firms.

Dale's survey of 171 companies who had introduced quality circles showed that 75% of managers are interested in introducing a quality circles programme in their company. A result of using a quality circles programme was an improvement in attitudes, morale, communications and improved organisational efficiency. Although the primary topic of discussion was quality, other frequently discussed topics were cost reduction, production processes, productivity improvement and wastage.

There are certain obstacles to the effective use of quality circles, principally the need for all participants, including unions, to be involved and consulted at the early stages. The middle management will be highly involved and will have the greatest influence over the success of the policy; if they feel threatened by the policy because of the loss of control and the threat to the existing patterns of power, then they have no incentive to encourage it and it is more likely to fail. As with all other new management practices, it is vital for there to be a commitment from senior management to the success of the new policy.

Quality circles were criticised by Gow (1989) who stressed that these techniques were not very common among Japanese subsidiaries abroad, that many circles had failed in Japan, and that they are successful only in companies who already have a record of good quality management.

Crocker, Charney and Sikleunechzu (1984) said that:

> "Participation in a circle is voluntary, but in many companies, poor
> management pressure pushes participation rates for workers to 90% or
> more."

Cole (1980) said:

> *"It is known that there is tremendous variation among companies and industries in how voluntary these activities are; in most companies with circles, there is a strong pressure on all workers to belong to quality circles. Not to do so would suggest to management a lack of commitment to corporate goals and thereby damage one's promotion prospects. There are companies that have quota systems -so many suggestions per circle, so many suggestions per month -which are hardly models of voluntarism. When it occurs, QCC becomes a burden rather than a motivation scheme. There is a lack of spontaneity; the circle becomes unproductive and inactive."*

3.5.2.3 Total Quality Management

The concept of Total Quality Management as the latest Japanese management technique has been applied by some western companies to improve the quality of their products.

Companies in the US and the UK were studied by Kinnell, Cook, Rillidge and Morris (1987) and compared to Japanese companies in their attitude to managing quality. These companies were seeking to build their quality management through product design, training and customer relations. They found that by adopting a Japanese attitude to quality management the western firms had improved their performance and efficiency, but they had not achieved the same level of quality management as the Japanese.

The researchers suggested three requirements for successful use of this organisational arrangement: the total support of the management, the involvement and commitment of all concerned (employees suppliers and customers) and a well considered strategy of implementation.

The importance of TQM and marketing in the improvement of quality and producing products and services at a required standard was recognised by Witcher (1990), who said that

> *"Marketing texts and marketing training have ignored the correspondence between quality, training and marketing. Quality is about the process which produces products and services at a required standard. Training is about producing people to work that process. Marketing is about giving to those people the purposes for their work. TQM, as its name suggests, is a total approach to management and opens up hope for a more integrative role for marketing."*

Marketing can play an important role in quality improvement through supporting organisations, corporate image and the relevance of employees' jobs to quality.

Certain difficulties in applying a TQM concept in US firms were recognised by some researchers; for example Ebrahimpour (1986) indicated some of them, such as the lack of management understanding and leadership, the lack of communication, training and the use of double standards to assess employee performance, as well as employee resistance.

However he stressed that such difficulties can be solved though by developing organisational characteristics such as a management emphasis on continuous quality improvement and developing closer relations with a smaller number of vendors and suppliers.

By adopting Japanese management practices like "full design for manufacturing practices" UK firms had improved their performance, and they further improved this by applying extensive product testing and collaboration between vendor and production.

The conclusion of the report was that the Japanese attitude to quality management can be transferred to other countries and can improve product quality, productivity, efficiency,

worker participation and the inspection time for finished products, but that it has to be handled properly.

3.5.2.4 Just in Time

Schonberger (1982) described the concept of Just in Time technique as:

> "The JIT idea is simply produce and deliver finished goods just-in-time to be sold, sub-assemblies just-in-time to be assembled into finished goods, fabricated parts just-in-time to go into sub-assemblies and purchased materials just-in-time to be transformed into fabricated parts."

A little more provocatively, the goal of JIT has been described by Bicheno (1987) as:

> "To produce instantaneously, with perfect quality and minimum waste."

Oliver and Wilkinson (1988) indicated that the goal of perfect quality requires tight control over the production process and the removal of all elements of the process that do not contribute value to the product, such as storage and movement within a factory. A variety of techniques are used to do this, such as the "pull system", a flexible workforce, and reductions in work in progress. The benefits of this system are more efficient use of working capital, reduction of lead times, improvements in quality and reductions in wastage.

Three requirements for a JIT system to be successful have been identified: swift machine set-ups, single direction material flows, and total quality control throughout the process.

An example of a western company successfully introducing a JIT policy is Ford in 1984, but they experienced problems in practice with their suppliers, such as Southern Components, as the supply of the contractors' raw materials cannot effectively be operated

72

under such a principle, and had to increase their stock of materials. However quality levels were found to have been improved by introducing the system.

A survey by Voss and Robinson (1987) of aspects of JIT production that had been or were planned by companies shows that 80% were using a flexible workforce, more than 50% were using aspects of the system such as reducing the amount of work in progress, using statistical process control, reductions in set-up, and work team quality control. Other elements of the JIT system, such as U shaped production lines and smoothed build rate had ben introduced to a far lesser extent. The implication is that the JIT philosophy has been applied piecemeal and that the easiest elements to introduce were the most frequently implemented, not necessarily the most useful. The conclusion though was that many companies reported benefits from their use of JIT techniques.

In the report by Schroeder, Sakakibara, Flynn and Flynn (1992) there were examples of US firms who have used JIT techniques very effectively, such as the "pull" system, set-up time reductions, cellular lay-out and multi-function workers, to such an extent that they outperform their japanese competitors in terms of cycle times, showing that they have learnt the technique and successfully applied it in their own environment.

3.5.2.5 Suppliers Relations

An aspect of the JIT philosophy is the requirement for suppliers to be operating a similar system themselves. This means that there has to be a closer relationship between manufacturers and their suppliers. Notable examples of this practice developing occur in the car industry.

Oliver and Wilkinson (1988) showed that British Leyland in the 1980s attempted to tighten control over their suppliers by insisting on not passing higher wage costs on as higher component prices, and Austin Rover announced that they were to reduce their stock in hand from ten days to two days, and they gave "preferred supplier status" to a few component suppliers on long term contracts.

By reducing the number of suppliers companies can reduce the administration time in purchasing activities, and can create closer relationships with their suppliers. This passes most of the responsibility for components and final products to the subcontractors, who must be operating a good quality management program of their own.

An example of the close relations between suppliers of components and production of final goods is that of Nissan in Sunderland, where subcontractors such as Ikeda Hoover have been attracted to the immediately surrounding site; another example is the taking of an 80% equity share-holding in a joint company in Sunderland supplying small body pressings with Yamuta Kogyo Ltd. By locating their suppliers close to their own factory, their supplies can be delivered "just in time", and stocks are reduced to seven hours of production needs, as suppliers are expected to be able to deliver every two hours. This is a good example of a Japanese manufacturer employing Japanese management techniques in the west with a high level of success.

Three important elements of relations with suppliers are the use of subcontracting, quality assured supplies and JIT supplies. In the previously mentioned study by Voss and Robinson (1987) they found that 87% of the companies they looked at were subcontracting non-core activities, and 5% were planning to do so; 61% used quality assured suppliers, with 23% intending to; and 42% used JIT supplies, with 27% proposing to use such a technique.

Oliver and Wilkinson demonstrated an excellent example of how Ford has changed the nature of its relations with suppliers by using 50% outside manufactured components in their production and in 1984 announced that they intended to reduce their number of suppliers by 33 per cent.

3.5.2.6 Japanese Production Management Practices

White (1980) showed that the Japanese had been successful in transferring their production management techniques to the UK. Differences that he noticed were that British managers maintained general supervision, and planning and other executive activities took place off the shop floor, whereas in Japanese subsidiaries great attention was paid to the planning and organisation of work, but there was also close involvement in the production line.

The Japanese were seen as authoritarian, with an emphasis on rules and procedures, and strict discipline, and it was felt that little attention was paid to the opinions of the workers in the consultation process of decision making; the daily section meetings on the shop floor were for distribution of information and for planning the daily activity.

Further evidence of the Japanese production management techniques being applied in the UK was shown through the pre-planning management practices in the shop-floor. Where the continuing role of management on the shop-floor seems to be concerned with three related aims: honing a smooth production system, shortening response times to problems and interruptions, and maintaining high quality standards.

The high standards in quality that were expected and achieved in the production process result from several factors such as the frequency of one hundred per cent checking and the recognition by all workers of their responsibility for quality. Through their continuous involvement in the production process on the shop floor the management were able to carry out checks on the quality of output.

The Japanese were very successful in transferring their production management practices to the UK. This was accomplished by using three methods: first, some line managers and supervisors had been sent to Japan for induction and training in the parent companies; secondly, younger supervisors, technician and engineers were sent on secondment from Japan to explain the technical procedures and standards; thirdly, many of the British workers had received training from Japanese workers in using the machinery and general training.

3.5.3 Difficulties in Transferring Japanese Management Practices abroad

Although it has been shown in the previous section that the Japanese had been very successful in transferring their management practices to the west, several researchers have shown Japanese companies facing difficulties in transferring their management practices abroad.

Negandhi (1973) studied how effectively japanese and american firms transferred their management techniques into the environment of Taiwan. He studied 27 American, Japanese and local companies, and found that the Japanese faced greater difficulty in transferring their management practices to Taiwan than their US counterparts.

The study revealed that to a great extent the Japanese companies had modified their practices to assimilate to the local culture, while the American subsidiaries had maintained their own practices. For example, the Japanese adopted short term planning rather than long term, and training programs were provided only for blue collar employees. They relied on monetary rewards to motivate their employees and there is little use of election and promotion criteria.

There are examples of conflicts between management and staff of Japanese subsidiaries in developed as well as developing countries. For example, a YKK plant in Italy, following an eighteen month strike over complaints about hard driving Japanese management, the Japanese managers attempted to operate the machines themselves to prove their loyalty to the company; a labour magistrate found the company guilty of "anti-union activity" and ordered the managers to keep away from the production line during the strike.

Sim (1977) studied American, British and Japanese subsidiaries in Malaysia. He found that the level of participation and information sharing in planning was greatest in the American companies and lowest in the Japanese. Among the Japanese companies all planning and decision making was limited to the Japanese executives.

Negandhi and Baliga (1979) supported Sim's findings in a study of 120 American, Japanese and European subsidiaries in less developed countries, and found that the Japanese firms had adopted a "localised" approach. This resulted in a maintenance of the status quo, and the employees were often held in low esteem - as was usual in local enterprises and government agencies. The result of such policies was low morale, low productivity, high absenteeism and staff turnover rates. Despite a failure to recognise the effect of their attitude on their employees, the Japanese managers did recognise that there were major manpower and personnel problems in their operations.

Lim (1987) studied how Singapore's manufacturing industry had been influenced by the transfer of western and japanese management practices. Japanese subsidiaries were facing more difficulties in adopting the management practices of their parent companies in Japan, whereas the American companies faced fewer problems in adopting the US management practices of their parent companies. The greatest problems for the Japanese subsidiaries were:

1. The average Singapore employee was seeking a high salary and rapid promotion. Consequently, many good workers left the company after acquiring skills to seek higher salaries elsewhere. This made the traditional practice of lifetime employment unfeasible, and gave little encouragement to train their employees.

2. Singapore workers preferred being given authority to make decisions, rather than use the traditional Japanese method.

3. The average Singapore employee was very conscious of his job designation or title and did not expect to carry out functions not listed in his job description.

4. The typical Singapore employee did not mix his work with his family life. Consequently, many employees did not appreciate non-work involvement with his superiors. This caused friction between the Japanese and the Singapore employees.

Hayashi (1987) suggested that there are two major problems facing the Japanese management style when it is applied in a foreign environment: the acceptance of the Japanese decision making process and the japanese ideas of organisation and interpersonal relationships.

The key that turns the decision making process is that it takes place "within a context of maintaining the interpersonal balance under a communally-owned corporate system". The right to take part in the decision making process depends on previous and future potential contributions to the growth and stability of company assets, an alternative ranking system within the organisation. It is not based on a democratic consensus, as sometimes expected by the employees, with all involved allowed to express their opinion and have equal voting rights.

A second problem is the organic nature of the Japanese organisation, built around co-operation: this is in comparison to the mechanistic, departmentalised organisation of western companies. This leads to problems for Japanese companies in gathering an effective consensus in a large organisation with many affiliates on its periphery who do not share in the sense of corporate identity.

Some evidence was found by Gow (1989) of the success in the transfer of Japanese management systems to Europe, but also that there were some significant problems.

For example, he found that the seniority system does not play an important part in promotion decisions. Discrimination against overly mobile personnel, particularly at the recruitment stage, means that in the long term, lack of mobility may be rewarded by certain firms. Seniority payments do not seem a feature of the system at present.

Another problem concerning the difficulty of transferring Japanese management practices is whether this is maintained by western managers in western companies or by Japanese subsidiaries in the west which are international companies run by Japanese managers with a local workforce.

An important point made by Gow is that it is necessary for European countries to learn from the experience of the United States in this area. The Americans have considerably greater experience in accepting Japanese management techniques, and some issues being raised in the US now are potentially important to policy makers in Europe.

There are problems facing Japanese companies in transferring their management practices not just to western countries but also within the Orient itself. Fukudo (1983) suggested that the Chinese have a similar traditional value system to that of the Japanese, yet the management style was very different; there are more formal links between superiors and subordinates, and the less formal style of Japanese management was interpreted as attempts to undermine a leader. There is little recognition of the contribution of employees, and managers used a tactic of "divide and rule" which would be inappropriate to Japanese companies. Similarly, the Chinese style of management is very "top-down" rather than the "bottom-up" style of the Japanese, as managers seek to impose their opinions in the decision-making process of their employees.

Schroeder, Sakakibara, Flynn and Flynn (1992) compared Japanese subsidiaries in the United States with world class US owned manufacturers and traditional US plants.

They found that there was a great similarity between the production management practices of the top US firms and those of the Japanese, despite some minor differences in their implementation.

They found that in comparative terms, Japanese subsidiaries in the United States were not significantly advantaged over top class US manufacturing plants in terms of their costs or productivity - indeed in some areas they were inferior, such as their length of time to fill an order and time between raw material procurement to customer delivery. They

suggested that the differences in performance could be directly attributed to the management practices.

Both the Japanese and the top US companies stressed communication and cross-departmental co-operation as keys to long term survival - what were called *"organisations without walls"*. Similarly both sets used similar quality management policies, as the Japanese have imported their JIT management practices heavily; similar practices are used to varying degrees by their US counterparts.

Significant differences were noted though: in their human resource policy, the Japanese rotate their employees through different departments, leading to better communications and co-operation, and very careful assessments being made in recruitment; in US traditional plants, there was a greater level of employee turnover, which leads to problems in retaining the knowledge, experience and competence of the workforce.

The Japanese face problems in their management of their plants in the US: the most important is the inability of expatriate Japanese managers to communicate effectively in english, which means that they tend to speak Japanese among themselves; this is especially damaging as effective communication is seen as a key to Japanese management techniques. Further problems included the difficulties in attracting and retaining competent American managers, and difficulties in getting workers to take part in continuous improvement programs, and in training workers to oversee the sophisticated manufacturing systems for effective preventive maintenance.

3.6. The Saudi Response to Adapting Western Management Practices

Arbose and Bickerstaffe (1982) stated that many Saudi managers are interested in transferring Western management techniques to their companies in Saudi Arabia. This was emphasised by the Saudi Oil Minister, Sheikh Ahamed Zaki Yamani who said that:

> "It is necessary to change the mentality of the people in the Middle East toward more Western style business methods."

To achieve this transfer students are encouraged to study in Western Universities, professional people are invited to conduct seminars on management techniques and western companies are encouraged to conduct business in Saudi Arabia.

The importance of sending students abroad to learn Western techniques was emphasised by Philip Lumsden, British national who is the deputy director of the Trans-Arabia Company in Jeddah. He stated:

> "If Arabs are to assume commercial and technical responsibility for their own enterprise, they first of all must understand the technologies involved. And the easiest way to do that is in academic institutions in the West."

An immediate difficulty for students travelling abroad is that they are presented with a different set of cultural values and traditions. Sheikh Yamani dismissed the problem of the influence of western culture, stating:

> "Sometimes it gives them a cultural shock to live in a different environment. But if the student can survive that, he will come back a stronger individual than when he left."

While there is great concern about the effect of western influence on arab culture, there is a greater doubt about the way in which western techniques are used within the context of Saudi Arabia. Abdul Aziz Al-Gwaize, Vice-Rector at the Saudi University of Petroleum and Minerals in Dhahran, stressed that:

> *"At the moment our government is more concerned about outside influences on Saudi students attending western universities than it is about them coming back with an armful of sophisticated management systems and techniques that they cannot adapt to the Saudi business environment."*

The point to emphasise is that while learning western techniques is important to improve business performance, careful attention must be given to local cultural traditions in the implementation of new ideas; what has been learnt must be applied appropriately. This was stressed by Yamani who said that:

> *"The training in problem solving will give you the muscles for your brain to face a problem at home which may be different. It is not a waste."*

This was also referred to by Professor Aguilar, one of a trio of Professors from Harvard Business School, who took part in a four day advanced management seminar in Taif, Saudi Arabia. Professor Aguilar said that the seminar had proved to be a learning experience both for him and the students, and that he had gained a greater insight into the needs of his arab students. He recognized the limitations in trying to teach the students western management skills without recognizing that they would be applying these techniques in an environment totally different to the United States. He felt that through his experience at the seminar and his own exposure to the Saudi cultural and management environment he had increased his ability to empathise with his Arab students at Harvard, stating that:

"In my judgement, the same programme with the same instructors would have been less responsive than it was to Saudi needs had it been held in Boston, however good our intention."

Also emanating from the seminar, Professor Aguilar, with the other two professors, planned to develop case studies on various problems faced by Arab companies. These cases could be used in future Middle East seminars and in programmes at Harvard that use the case study method of teaching. The Professor said that:

"The Arab case studies will enable our instructors to address the underlying and taken-for-granted values of United States business by exposing students to management practices in another cultural setting."

Western techniques have been adapted to local needs to a certain extent already. Osman (1978) conducted a study showing that use has been made in Saudi Arabia of american experience, the idea of "position classification" within companies having been introduced in the law. This system has not been applied in the same rigid manner that is used in the United States, the intention being to avoid an over-sophisticated system which would not match Saudi requirements.

A committee was set up to assist the classification department at the Public Personnel Bureau in establishing a structure of groups, responsibilities and positions. The small educated population in Saudi Arabia led the committee to realise that a rigid definition of tiering would not be applicable. In addition the education system is not characterised by the narrow specialisation of the United States. The organisation was established after two years' work, based on broad groups with some degree of flexibility, and allowing the transfer of an employee from a position in a particular group to a related group. Formally the transfer may be made through the classification department of the Public Personnel Bureau. Requirements have been determined loosely for each class.

3.7 The Saudi Response to Adapting Japanese Management Practices

Many Saudi managers have been influenced by western management techniques and attempted to use them in their firms. However, attention has more recently been focused on understanding and incorporating Japanese management techniques, particularly in producing high quality products at a reasonable cost. The attraction is the reliability and consistency of Japanese firms in producing high quality products with fewer problems than encountered with the firms from the United States.

According to a survey conducted by Ali and Al-Ali, (1991) involving Saudi managers and expatriates working in Saudi Arabia, there is a general belief that Japanese firms do not face problems of declining quality. There are fewer obstacles than faced by US firms in introducing new high quality products. Ali and Al-Ali said that although the United States has traditionally been the main exporter to Saudi Arabia, since 1985 it has been overtaken by Japan. The two authors stressed that the competitive advantage of the Japanese firms is based on greater flexibility and adaptability to customer demand, giving them a significant advantage over firms from the United States.

A successful management technique applied in Japan to improve product quality is "Quality Circles" which was developed in the west and adapted to local Japanese needs. The principle of this system is that a problem is solved directly by those workers in immediate contact with its source through discussion, rather than by decisions being imposed by senior management.

The resourcefulness of the Japanese in adopting this system was referred to by Cole (1980), stating that:

> *"The capacity of the Japanese to borrow, adopt and institutionalise some of the methods, techniques and ideas of western organisational technology and behavioural science is no where more clearly evidenced than in the introduction of Quality Control Circles."*

Saudi Arabia has attempted to learn from the Japanese in this area. This was discussed by Elmuti (1981) who did research in one manufacturing plant of a large, diversified, non-unionised, multi-national company located in Saudi Arabia. The plant was in financial difficulties, caused by low productivity, high operation costs, high absenteeism and strong foreign competition. The management decided to establish a Quality Circles programme experimentally before implementing it in the whole company. An experienced Japanese consultative group was invited to train employees and assist in the implementation of the programme. Top management gave their support, committing resources to employee development to promote team-work and open communication channels.

Middle management and first line supervisors were trained by the consulting groups for a few weeks before the commencement of the Quality Circles programme. Five groups of employees, comprising eligible volunteers, were trained by the consulting group, then placed in five quality circles. To ensure a fair and accurate assessment of the programme, a control group was formed from those who had not volunteered to participate, but were comparable on most other considerations.

A survey was conducted six months before the implementation of the Quality Control programme, and a second twelve months after changes on employee perceptions had begun to be assessed.

In the period preceding the programme, rates for both groups had been almost the same, the efficiency average rate being seventy six percent, productivity, sixty two per cent and employee absenteeism, eighteen days per annum. After twelve months there was a considerable improvement being shown in each area by the group testing the policy: the efficiency rate had increased to ninety per cent, productivity to seventy two per cent and the absentee rate dropped to seven days per annum, while the control group had remained constant.

3.8 Summary and Conclusion

There have been a number of studies of how management techniques can be transferred between cultures; however there are few definite conclusions.

The extent of the influence of local culture and expectations on the success of transfers of management is not clear, but there is evidence that a lack of sympathy to local expectations will cause problems, but this is to be held in contrast to some evidence of success in using accepted methods. What seems clear though is that western or japanese management techniques are not universally successful by definition, but they can contribute to the economic growth of developing countries. There are examples of both the success of using both western and japanese techniques, such as in the Philippines by Flores (1972), but also of their failure, such as in India. It seems clear that there is no straight answer to the question of whether foreign management techniques can be imported wholesale.

This is even further reflected in the study by Schroeder, Sakakibara, Flynn and Flynn (1992), which showed that American firms in some cases were outperforming their Japanese competitors by implementing Japanese techniques such as Just in Time, but that Japanese companies were still tending to be more effectively managed than US firms. Despite this, problems were identified, such as the failure of communication due to problems in speaking English and problems in recruitment of trained staff.

Japanese management is not a panacea for the problems of western industry, but it can make significant improvements in efficiency and productivity.

Much of the research into the transfer of management practices has been conducted in the developed countries. More research activity must be carried out in the developing world, to study their reaction to non-indigenous management techniques. This is particularly true of countries which have a considerable influence over the global economy through their control over natural scarce resources - such as Saudi Arabia, which is the world's largest exporter of oil.

Managers and government in Saudi Arabia must pay careful attention in implementing western or Japanese management practices in the petrochemical industry, due to the differences in the environment in that country. Studying the previous experiences of both success and failures in transferring management practices to Saudi Arabia and other developing countries will help them to adapt the most appropriate system to the Saudi environment.

The next chapter deals with the research design and methodology in the investigation of the transferability of western and Japanese management practices to the Kingdom of Saudi Arabia.

CHAPTER FOUR

Research Design and Methodology

4.1 Introduction

It is important to discuss the research design and methodology applied in conducting this study of the transferability of Japanese and western management practices concerning product quality to the petrochemical industry in Saudi Arabia. This chapter deals with research design issues generally, and in this study in particular, and the data collection methods applied to obtain the information for this study.

Particular areas of discussion in the report include the model applied for this study, and the definition of the variables involved in the study. The relevant subjects are highlighted in this chapter, where choosing the appropriate population and deciding the sample size are discussed. The design of questionnaires, the pilot study and the final fieldwork are also discussed, and the method of processing and analyzing the data. Finally a brief summary of the chapter is provided.

4.2 Types of Research

Research has been classified in several ways.

Sekaran (1984) showed that research can be undertaken for two different purposes: either to solve a currently existing problem in the work setting, which is called "applied research"; or to contribute to knowledge in a particular area, or to improve our understanding of problems that commonly occur in organisational settings and how to solve them, which is called "basic" or "fundamental" research.

Hakim (1987) divided research into eight categories based on the research design: research reviews, meta-analysis and secondary analysis; qualitative research; research analysis of administrative records; ad hoc sample surveys; case studies; regular surveys; longitudinal studies; and experimental social research.

Other authors divide research into qualitative and quantitative approaches, for example Rist (1977) refers to these on two levels. At one level, qualitative and quantitative refer to distinctions about the nature of knowledge (how the world is understood and the ultimate purpose of research); the other level refers to research methods (how the data is collected and analyzed, and the type of generalisation derived from the data).

McMillan and Schumacher (1989) classified research by the technique used to collect data. Their categories were: observation, questionnaire, interview, documents, tests and unobtrusive methods.

McMillan and Schumacher (1989) identified four types of research design: experimental, non-experimental, ex post facto and qualitative. Due to the importance of this area in this study, the next section deals with research design in greater detail.

4.3 The Research Design

McMillan and Schumacher (1989) defined research as *"a systematic process of collecting and logically analyzing information (data) for some purpose"*.

The importance of research design has been further emphasised by many researchers. Hakim (1987) showed that research design deals primarily with aims, uses, purposes,

intentions and plans within the practical constraints of location, time, money and availability of staff. Research design was also meant to eliminate or reduce sources of error and bias that might influence the interpretation of results. This was brought out by McMillan and Schumacher (1989) who said that:

> "The goal of good research design, then, is to provide a credible answer to a question, and bias reduces the credibility of the result. By carefully designing the study, the researcher can eliminate or at least reduce sources of error or bias. Not every potential source of bias can be controlled completely in research, but there are principles for planning research to minimise such influence."

McMillan and Schumacher (1989) identified four types of research based on research design. These are: experimental, non-experimental, ex post facto and qualitative.

In "experimental design" the researcher manipulates what the subjects will experience; the researcher has some control over what will happen to the subject by systematically imposing or eliminating specified conditions. The experimental design aims at investigating cause and effect relationships between manipulated conditions and measured outcomes.

In "non-experimental design" there is no manipulation of conditions. The researcher makes observations or obtains measurements from the subject to describe what has occurred. Non-experimental designs are not intended to show cause and effect relationships, but can provide tentative or explanatory cause and effect relations.

Ex post facto design is used to explore possible causal relationships among variables that cannot be manipulated by the researcher, in which two or more samples are comparable except a specified factor. Possible causes are studied after they have

occurred. This differs from experimental design in the sense that the researcher focuses on what has occurred in comparable groups.

Qualitative research design is less structured than quantitative. Specific procedures are identified during the research rather than specified ahead of time. Each step is dependant on prior information. This type includes case studies, ethnographic and document analysis, or some combination of these.

Selection of appropriate research design depends on several factors such as the type of information needed, and the available budget, resources and time. The choice of research design is connected with the purpose of the research, such as whether it is exploratory or explanatory.

The present study is mainly concerned with the transferability of Japanese and western management practices to the Saudi petrochemical industrial sector. No similar work has been conducted before in the Middle East and in the Kingdom of Saudi Arabia in particular. Therefore, the nature of this study is considered exploratory. This was asserted by Pauline (1982) who indicated that:

> *"The reason for choosing an exploratory approach is becasuse of 'a lack of previously developed knowledge, theory or method.'."*

4.4 Model applied for this Research

The model applied in this study is illustrated on page 96, which shows that there are three variables which influence the product quality; management philosophy, management practices and production management. This model has been adopted

from the theoretical models of Negandhi and Frasada (1971) and Horn, Grubb-Ingram and Masson (1987) (see Appendix 3).

Since this study is concerned with the transferability of both Japanese and western management practices to the Saudi industrial sector, some modifications have been made in this research over the Negandhi and Frasad model.

Environmental factors (socio-economic, educational, political and legal factors) have been excluded as this study applies to firms located in the Kingdom of Saudi Arabia (specifically Al-Jubail city) and they operate under the same environmental conditions.

The term "production management" has been used as an indication of the effectiveness of the management in approaching product quality, as the term is concerned with product design, suppliers' performance and production operation.

The term "enterprise effectiveness" has been replaced by the term "product quality".

The basic assumptions of the model applied to this study are as follows:

1. Product quality is influenced by management philosophy, management practices and production management.

2. Production management (production design, suppliers' performance and production operation) is influenced by both management practices (planning, organising, leading and controlling) and management philosophy (attitude to employees, customers, suppliers, share holders, competitors, market research and government).

3. Management practices are influenced by management philosophy. Management philosophy is influenced by several factors such as cultural and business environments.
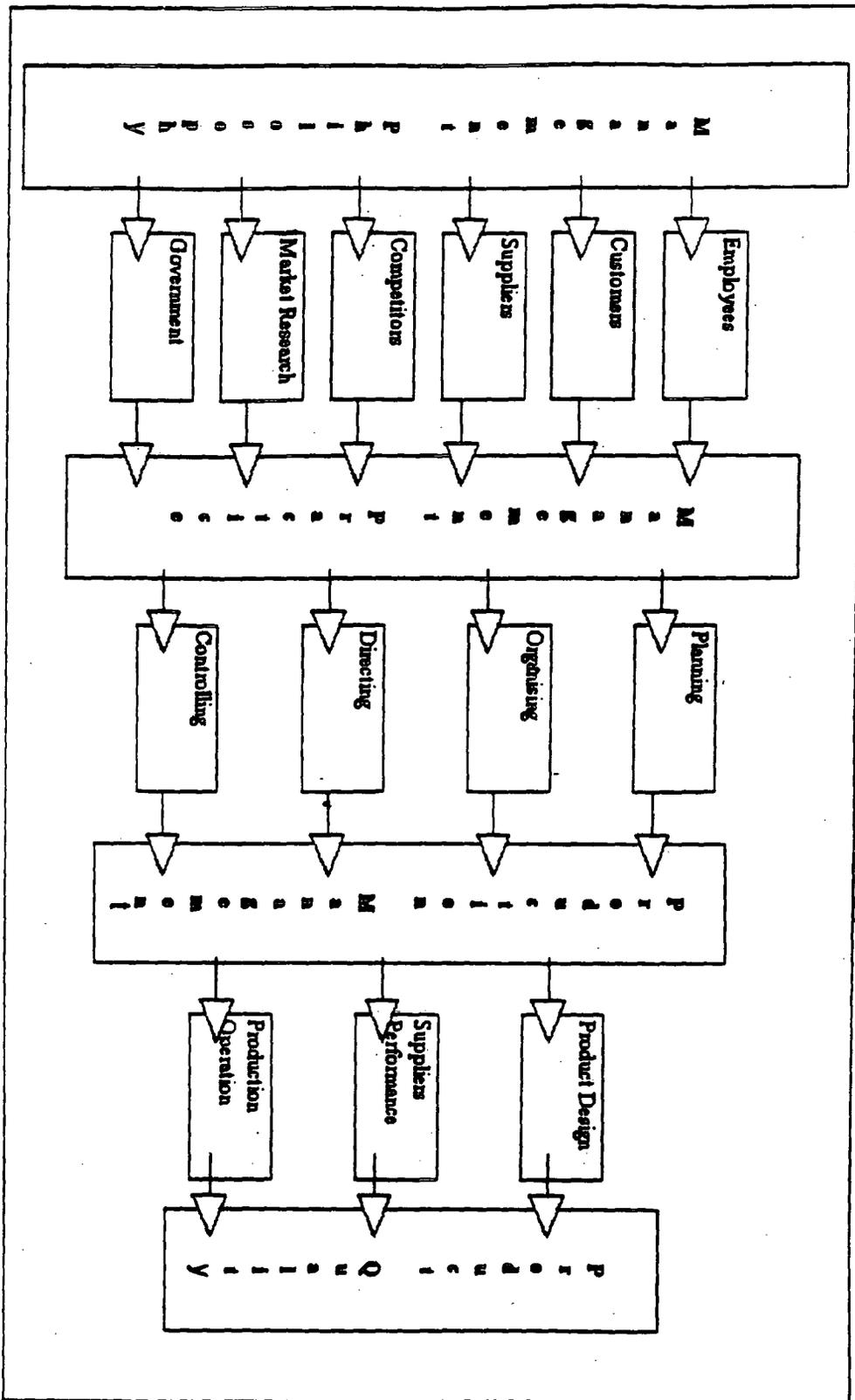
4.5 Definition of Variables

"Management philosophy" refers to the corporate philosophy as described by Ouchi (1982) in which underlying values and beliefs are responsible for achieving objectives, operating procedures and standards of responding to problems. Specifically in this research management philosophy refers to corporate philosophy by stating explicitly their attitudes and beliefs towards: employees, customers, suppliers, competitors, market research and government.

"Management practices" refers to management functions as explained by Negandhi (1973). Five functions have been selected for investigation: planning, organisation, staffing, direction and leadership, and control. In this study, staffing and direction and leadership were combined.

"Production management" refers to product design, suppliers' performance and production operation, as suggested by Horne, Grubb-Ingram and Morris (1987).

"Product quality" refers to meeting the customers requirements internally (employees) and externally (suppliers, competitors, government, etc.) as indicated by Oakland (1989).

4.6 Choosing the Research Location

Saudi Arabia has been chosen as a study area for the following reasons.

The transferability of Japanese and western management practices has been examined by many researchers in different parts of the world, particularly in the United States and United Kingdom. However, no empirical work or study has been conducted in this area in the Middle East or Saudi Arabia in particular. Therefore, studying this subject within the Kingdom of Saudi Arabia would contribute to the understanding of

97

an area that has not been previously investigated. It would assist in clarifying management technique transfers to other parts of the world.

The experience and knowledge of the researcher in dealing with government authorities and businessmen in Saudi Arabia as an important factor, as knowledge of the study area is essential to good research conduct.

Also, the study was funded by King Abud Al-Aziz University in Jeddah, who generally define the study area.

Lastly, Saudi Arabia is the researcher's home country, and it was attractive from the viewpoint of cost (described as "the major obstacle to research" by Simon (1969). Most importantly, because of this, there were no cultural or linguistic difficulties for the researcher, and the researcher was able to discuss ideas effectively with the companies in a way that might not have been easily achieved in another environment.

4.7 Choosing the Collection Methods

The next stage of the research process was to select the most appropriate method to be used for collecting data for this study, considering the time and cost constraints. There are three major methods that researchers have employed in survey research. These are personal interviews, telephone interviews and postal questionnaires.

Alreck and Settle (1985) said that:

> "*The choice of a method for collecting the data depends on the information needs and value, as well as the budget and resources available for the project as well as the timing. Collecting the data requires contact with respondents, and that can be accomplished by*

98

speaking with them in person, by reaching them on the phone, or by mailing them a questtionnaire to be completed and returned. Thus personal interviewing, telephone interviewing, and direct mail surveys are the three princial methods of data collection used in survey research. The selection of the most appropriate method for collecting the data is a key decision for the researcher. Each of the three basic methods of data collection has its own special capabilities and limitations."

The reasons for choosing the questionnaire approach for conducting this study as a main approach are discussed below.

Firstly, it is considered extremely difficult to apply the observation approach in this study as a main approach, due to the time constraints. Where the researcher has to finish his project within a certain time, the questionnaire approach allow enough time to study the phenomena very carefully.

Secondly, it was very clear through the pilot study that all managers working in these forms were very busy, as they only have one hour during the working day to have their meals and rest.

Thirdly, applying the survey approach would enable the researcher to generalise his results, and more respondents can participate as compared to the other approaches.

Finally, the questionnaire approach is considered by Alreck and Settle (1985) as being more versatile, flexible, economical and efficient as compared to the other approaches.

4.8 The Survey Population

Having selected the Kingdom of Saudi Arabia as the research area, and chosen the research method, it was necessary to survey the Saudi, western and japanese companies and define their investment activities. Following previous experience, the authorities in the Ministry of Industry were contacted by telephone and a copy of the list of institutions, factories and companies with investment activity in Saudi Arabia as provided. The Ministry of Industry is the primary authority dealing with the promotion of the industrial sector in the Kingdom of Saudi Arabia.

From this list, the researcher was able to form a rough impression of the extent of investment undertaken by the Saudi and foreign companies, particularly by the western and japanese companies and in the industrial sector as a whole. The researcher was also able to find more information on those companies with regard to location, size and nature of activities of investment and the ratio of foreign capital in the establishment of these companies, and other important information. By studying the list and telephone contacts with the Ministry of Industry, the researcher identified those western and japanese companies in the Kingdom of Saudi Arabia who performed their activities through joint ventures with Saudi companies according to the regulations laid down by the Saudi government.

The list of companies contained about two thousand private establishments, made up of a mix of corporations, factories and companies. It was essential to define the companies that will be the subject of the study. The following conclusions were made from studying the list.

About 80% of the companies are corporations, factories and small companies owned and administered by Saudi citizens, of which some western companies share activities with Saudi companies through joint ventures.

About 20% are large or medium sized companies either owned by Saudi and western companies through joint ventures and administered by a combination of western and Saudi managers, or were owned by japanese and Saudi companies, using a mixture of managers from these countries.

The actual number of large and medium foreign companies investing in the industrial sector in Saudi Arabia is far less than the number of saudi small corporations and companies, but their capital investment considerably exceeds that of the Saudi companies. This is particularly true in the petrol and petrochemical industries, which represent the backbone of the Saudi economy.

Many of those companies deal with different specialities and are distributed in many cities in the Kingdom of Saudi arabia. It is more difficult to study all these companies simultaneously, as this would require great financial resources and additional researchers which were not available to this study.

Most Saudi, Saudi-western and Saudi-Japanese companies are engaged in the field of the petrochemical industry. They are located in the industrial cities of Al Jubail and Yanbu. It was decided to make a field trip to visit these companies to gather information on their activities.

Two tasks were performed. Personal contacts were made with officers in the Ministry of Industry to provide preliminary information and lists of firms. The

second task was a visit to the firms in an attempt to gather more information as described in the pilot study. As a result, eight firms working in the petrochemical industry were selected, which were grouped as follows:

1. Three firms owned and administered by Saudi managers (called the "Saudi group" for research purposes).

2. Two firms owned and administered by both japanese and Saudi managers (called the "japanese group" for research purposes).

3. Three firms owned and administered by western and Saudi managers (called the "western group" for research purposes).

These eight firms were considered as the population of the study.

4.9 Choosing the Sample

The idea of sampling is to take a segment of a population which will represent the entire population. The purpose of such sampling is to reduce the time and money that would be spent if the total population were studied and yet still produce a meaningful study. This was emphasised by Greberik and Naser (1968) who suggested that:

"Normally we are interested in a large population and the additional expense and trouble of a full inquiry are rarely repaid in terms of increased accuracy, indeed the reverse may be the case, for the study of a selected sample may be easier to control, and more money may be available to obtain and process the information for each unit studied, whilst yielding considerable economies in total expenditure."

Two sampling procedures were defined by Dixon, Bouma and Atkinson (1987), which are described as random and non-random sampling. The random sampling method provides the greatest guarantee that those sampled are a representative sample of the entire population, and the two samples most frequently used are simple and stratified sampling. Non-random sampling uses accidental sampling, accidental quota sampling, purposive sampling and systematic matching sampling. Non-random sampling is based on the available samples, and it is hoped that those selected for study bear a resemblance to the larger group who do not take part.

Two limitations exist for non-random sampling. First the sample may not be an effective representation of a larger population, so generalising the findings will be limited to the characteristics of the subjects. This does not suggest that the findings are not useful or broadly representative, but that greater caution is needed forming generalisations from the results of the study. Also a second limitation is that a non-random sample may be biased. This is particularly true for volunteer samples, in which subjects volunteer to take part in the research. Studies such as Rosenthal and Rosnov (1975) showed that those who volunteer differ from those who do not in several ways;

"In general, volunteers tend to be better educated, of higher social class, more intelligent, more sociable, more unconventional, less authoritarian, less conforming, more altruistic, and more extroverted than non-volunteers. Their characteristics could obviously affect the results and might lead to different conclusions that would be different if a probability sample was used."

Similarly Foncese and Richen (1973) commented that:

"In order to (make statements about the entire population based on study of a sample) we must have some way of calculating the amount of sampling error... Probability sampling permits the measurement of sampling error, and hence is the most desirable kind of sampling... Once the probability of each individual entering the samples is known, the extent of error is measurable."

Based on these criticisms, the probability sampling method was chosen, using simple random and stratified sampling. In a simple random sample each individual must have an equal chance of being included in the sample. This type of sampling has two disadvantages: first, a precise definition of the population to be considered is needed; and secondly, there is a need for a complete list of the population, to guarantee that each member has an equal chance of being involved. In stratified sampling the population is broken into subgroups or strata, and a separate sample is taken within each subgroup.

Stratified sampling has been adopted in this study for two reasons. It was intended to make the sample more reliable than if one large sample was drawn. The second reason was that by applying the stratified technique of sampling the researcher was able to compare in a reliable fashion the characteristics of japanese, western and Saudi management practices by comparing the groups. Cochran (1977) suggests that:

"if data of known precision with certain precision are wanted for certain sub-divisions of the population a stratified sampling technique is more appropriate."

Cochran further suggests that there are many reasons for stratification, where he indicated that:

> *"If data of known precision are wanted from submissions of the population, it is adviseable to treat each subdivision as a "population" in its own right.... sampling problems may differe markedly in different parts of the population.... stratification may produce a gain in precision in the estimates of characteristics of the whole population."*

To decide the sample size, certain principles are effective. There is seldom a definitive answer about how large should a sample be for a given study: large samples cause additional expense and trouble (see Grebenik and Naser (1968)), while a small sample may fail to represent the population, and affects the generalisations that can be made (Fowler (1988)). Gay (1976) provided some guide-lines for this question:

> *"The minimum number of subjects believed to be acceptable for a study depends upon the type of research involved. For descriptive research, a sample of 10% of the population is considered minimum, for a smaller population 20% may be required, while for correlational studies at least 30 subjects are needed to establish the existence or non-existence of relationship."*

Based on these guide-lines, on the information obtained during the pilot study and discussions with the firms' managers, it has been decided that twenty respondents would be selected from each firm. This gives a total of 160 respondents randomly selected from the three groups of organisations.

Sixty respondents were taken from the Saudi group, which represents 37.5% of the total population, all of whom are Saudi managers; similarly, sixty respondents were chosen from the western group, representing 37.5% of the total population, of whom half are western managers, and half are Saudi managers; forty respondents were taken from the japanese group, due to the difficulty of finding more than two japanese firms in the petrochemical industry and the smaller number of japanese managers, who represent 25% of the population. In these organisations half the sample were

japanese managers and half were Saudi managers. (See Appendix Four for further details).

4.10 Questionnaire Design

The next stage of the research was to develop the instrument for the research, that is the questionnaire. Questionnaire design involves several stages. Alneck and Settle (1985) suggested that there are three main stages in this process: deciding the questionnaire coverage, dealing with the questionnaire as an instrument for communication, and the lay-out and presentation of the questionnaire.

The first stage concerns the kind of information the researcher needs to complete his research; for this, the questionnaire has to be divided into four sections. The first section aims at providing general background information about the firms under study and the respondents involved. This information includes location of firms, diversification since establishment, number and nationality of employees, the length of time employees have worked for the firm, titles of employees' jobs. The second section was designed to provide information about management philosophy applied in each firm such as attitudes towards employees, customers, suppliers, competitors and government. The third section was designed to provide information about functional management practice applied with regards to planning, organisation, leadership and control. The last section provided information about production management in areas related to product quality, which involves product design, suppliers' performance and production operation.

The second stage in the questionnaire design is to look at the questionnaire as an instrument of communication. There are two important elements in this, selecting the relevant sample and the relevant questions. This has been emphasised by Galtung (1967), who said:

> "The selection of sample and instrument must be done with two questions constantly in mind: is it relevant? and is it feasible? and every simple stage should be defensible in those two terms. The relevance question is especially important in connection with the selection, and the feasibility question in connection with the data collection."

To maintain these two objectives, two pilot studies were conducted before carrying out the major fieldwork. The aim of the first pilot study was to investigate the flexibility of collecting the data needed. The second was intended to test the questionnaire applied in the research and get feedback from respondent as, and make necessary changes to improve the questionnaire before conducting the final fieldwork.

Two types of question were used in the questionnaire. These were open questions (those which the respondent is not offered a selection of answers) and closed questions (those for which a list of acceptable responses is provided to the respondents). Both types of question were used in the questionnaire, and most questions were closed ones. This was due to the reasons emphasised by Floyd and Fowler (1984):

1.The respondent can answer more reliably the questions when response alternatives are given.

2. The researcher can interpret the answers more effectively when set alternatives are given to the respondents.

3. When completely open questions are asked, many people give relatively unusual answers that may not be useful analytically.

Multiple choice questions were used in the questionnaire because they were felt to be easier to answer. They were used to obtain either single response or multiple responses.

Considerable attention has been given to the vocabularies and ideas used in the questions. The researcher was very keen to avoid the use of terms or ideas that have more than one meaning. This point was also raised by Belson (1981), who stated:

> *"Undoubtedly, a much more common error than using unfamiliar words is the use of terms or concepts that can have multiple meanings in surveys, but the prevalence of misunderstandings of common terms has been well documented by those who have studied the problem."*

The questionnaire was written in english to avoid errors that might otherwise occur due to linguistic or cultural differences.

The pilot studies played a major role in eliminating problems related to the use of vocabulary and ideas. The importance of pilot studies in this respect is enormous, as indicated by Social and Community Planning Research (1972:11), who stated:

> *"An important function of the explanatory work is to provide the researcher with the concepts and the vocabulary used by the sorts of people who will be interviewed in the survey; he can then use his knowledge to devise questions which make sense in both respects."*

Four common scales are used to measure variables. These are defined by Burroughs (1971) as the nominal, ordinal, interval and ratio scales.

The nominal scale deals with measurement when numbers or answer symbols are used simply to classify an object, person or characteristic. It provides the largest amount of information on the variable. The ordinal scale provides some additional information by rank ordering the categories provided by the nominal scale. It incorporates not only the relation of equivalence but also the relation of "greater than". The interval scale, in addition to the ranking, provides information on the magnitude of the difference in the variables. The ratio scale provides the magnitude of the differences and their proportion as well, and is therefore considered the most powerful of the four.

The reason for using the combination of these scales deserves more explanation. For example, variables related to feelings, attitudes and perceptions cannot be measured on a ratio scale because their variables do not have an absolute zero point. We could say that a person has very little, or even negative, motivation, but we could not say that such a person has absolutely zero motivation.

The final stage in designing the questionnaire was the lay-out and presentation of the document itself. The researcher intended to make the questionnaire lay-out more efficient and minimise the risk of error. Considerable attention was given to questionnaire coding in preparation for computer analysis later. The questions were ordered such that easier questions were put first and the most difficult questions were put in the middle. Considerable attention was also given to the instructions provided in the introductory letter which guides the respondents as to how they should deal

with the questionnaire. Attention was also put into the grammar and spelling of the text.

4.11 The Value of the Pilot Study

The value of a pilot study has been emphasised by many researchers. For example Englehart (1972) emphasised this point by stating that:

> *"Before making a final commitment to a problem, it is desireable to investigate the feasibility of collecting the data needed to solve it unless the research is a follow-study or replication of earlier research by the same researcher, a pilot study is strongly recommended whether the data are to be collected from records, through use of interviews, by means of systematic observations, or through administration of tests."*

The function of a pilot study is to investigate both the feasibility of collecting the data for the research, and also the effectiveness of the methods, which in this case is the questionnaire. The need to carry out tests has been stressed by Galtung (1967), who said that:

> *"These instruments have to be tried on the whole range of possible subjects; the extremes, socially and attitudinally."*

To carry out the two checking functions, two pilot studies were made before the main fieldwork. The first was conducted in Saudi Arabia on the 15th June 1989; the objective was to gather basic information about the firms located in Saudi Arabia and their managers. A thorough investigation of the most appropriate methods for data collection was also made. The second pilot took place in the United Kingdom on the 10th September 1990, to test the questionnaire prior to the fieldwork. The reason for

conducting the second pilot study in the United Kingdom was mainly due to the crisis in the Gulf at the time. More details about the situation in the Gulf countries and its' effect on the study will be covered.

4.12 The Pilot Studies

At the end of the academic year in 1989, the researcher visited the Kingdom of Saudi Arabia. A field visit was made to the companies in Al Jubail and Yanbu cities. The principal objective of this visit was to gather preliminary information about the companies and the personnel in charge, and to establish good social contacts that proved to be necessary in conducting the research.

The trip lasted for ten days in which the researcher stayed for two days in Yanbu city and the rest in Al Jubail city. The researcher observed that some companies in Yanbu city are actually branches to the principal companies in Al Jubail city, or they carry out similar activities. It was necessary to travel by air from Yanbu to Al Jubail to save time and to avoid traffic problems on the highways. On arriving at Al Jubail city, the researcher found that all companies are located in Al Jubail Industrial City, which is about 50km from the airport and about 20km from Al Jubail city residential complex. There were no accommodation facilities in the Industrial City, which the researcher saw as necessary for contacts with companies and research conduct. A car was rented from one of the companies and accommodation was found in a hotel in the Al Jubail residential complex.

At Al Jubail, the researcher visited the General Relations Office which works in combination with the General Relations Offices for the three groups of companies. They were briefed about the objective of the trip and the research objectives and its

importance to the companies were discussed. The researcher presented to the authorities an official letter from the University of King Abud Al-Aziz, the researcher's reference and a letter from the Minister of Industry explaining the importance of the research and requesting their cooperation. The researcher also submitted a letter from Dr Witcher of Durham University who acted as Director of the research program and the direct supervisor responsible for the research (see Appendix Five).

The researcher worked for one day between 10am and 4pm in each company, during which he met colleagues and managers in charge of the companies. Most of these meetings were organised by the General Relations Office and provided a good environment to discuss in depth the objectives of the research and general administrative problems. The researcher also discussed with the engineers and managers the different management styles, during which he observed that most attention was given to quality and security. Despite problems of time for staff in charge, the discussions were extended into lunchtimes. The English language is the principle means of communication between managers in these companies, particularly between western and Saudi managers in western group companies, and between japanese and Saudi managers for japanese group companies.

The second pilot study commenced on the 10th September 1990; the objective was to test the questionnaire that had been revised following suggestions and modifications. This second pilot study had been planned to be carried out contemporaneously with the first, but due to the political crisis in the Gulf area and particularly Saudi Arabia, due to the Iraqi invasion of Kuwait on 2nd August 1990 it had to be abandoned. The conflict stemmed from disagreements on borders and oil field territory. The Iraqi army seized all Kuwaiti oil fields and moved towards Saudi Arabia, the world's

largest oil producing country. The conflict required international attention and the United Nations sent more than half a million troops from different nationalities to Saudi Arabia.

As tension escalated, the researcher had to modify the work plan. It was agreed to carry out the second pilot study in the United Kingdom to save time and make the necessary contacts with Saudi Arabia in an attempt to conduct the main study as quickly as possible before further complications or conflict in the area. The researcher selected a sample of nine administration students studying in the United Kingdom, three Saudis studying at British Universities, three Japanese students at Durham Teikyo University and three British students studying at Durham University. The questionnaire was distributed to them and they received detailed information on the contents of the questionnaire. Their constructive comments were considered, particularly from the Japanese students.

The researcher then visited Teikyo University in Durham and made an appointment with Professor Yasuo Kobayashi, the Vice Chancellor. He discussed with the secretary the objectives of the visit and submitted a copy of the questionnaire to enable Professor Kobayashi to study in depth its' contents before the meeting. The researcher visited Professor Kobayashi as scheduled. They exchanged personal cards, which is highly respected by the Japanese. The professor requested information about the companies working in the petrochemical industry in Saudi Arabia. The discussion went on to cover the management styles adopted in the administration of companies in general, with particular emphasis on the Kingdom of Saudi Arabia.

Professor Kobayashi made useful comments about the questionnaire and put forward valuable observations, especially with regard to the meaning of some words and how

113

the Japanese interpret them, and the possibility of translating the contents of the questionnaire into Japanese. Professor Kobayashi asked about the fluency of Japanese personnel in English, and the researcher referred to the first pilot study when no difficulty was experienced in communicating in English. Kobayashi dropped the idea of translating the questionnaire due to the difficulty in translating some words or ideas into Japanese, which would adversely affect the understanding of the questionnaire and consequently lead to misleading findings.

4.13 The Field Trip

The academic supervisor wrote a letter to the Minister of Industry in the Kingdom of Saudi Arabia (see Appendix 5), who is the principal authority responsible for companies in the industrial sector, and in particular the petrochemical industry. Dr Witcher described in detail the importance and the objectives of the research, and stressed further its importance for those companies and the private sector of the Saudi economy. He asked the Minister to provide all the necessary assistance by writing personally to the companies to cooperate with the researcher.

The University of King Abdul-Aziz also wrote official letters to all managers of the companies taking part in the study, stating the objectives of the study and requesting full cooperation with the researcher. (See Appendix 5)

Due to the political crisis in the Gulf region due to the Iraqi invasion of Kuwait and the arrival of more than half a million allied troops, it was felt that it was not convenient to post the questionnaire to the companies, and so the researcher left for Saudi Arabia, to stay near the companies to assist the contacts and conduct the research in person, as all the companies were located in the eastern region: this region contains most of the oil fields in the Kingdom, and was most likely to be a military target.

Before leaving, the researcher contacted a friend to arrange accommodation in a hotel; it had been difficult to find accommodation in Al Jubail City as most of the lodgings were occupied by soldiers who were in the area.

A friend who was working as Public Relations Manager was contacted, who arranged with his colleagues in other companies full cooperation, to coordinate the research

and to provide the necessary assistance for the researcher. Through the Public Relations Offices in the companies it was arranged for the researcher to spend a full day with each company to distribute the questionnaire and answer questions about its' contents. The questionnaires were randomly distributed among the top and middle level managers with the help of the Public Relations managers, and each individual was assigned a reference number to allow assistance and the follow-up of the questionnaire. The questionnaires were to be returned to the Public Relations Departments and would be handed on to the researcher later.

The researcher was asked to wait for three weeks before receiving the returned questionnaire results, because of the congested timetables of the managers. During this period the researcher was in direct contact by telephone and attended social gatherings with the managers; by these means the researcher made full use of all available channels to get more information, exchange ideas and answer questions relating to the questionnaire.

The researcher spent two weeks checking that all the questionnaire forms had been completed correctly before returning to the United Kingdom. Incomplete forms were returned to the companies according to their serial numbers. Short interviews were requested with two managers from each company, preferably the company director and the production manager or their deputies.

At the end of the trip all the companies were thanked, especially their Public Relations Officers who had significantly contributed to the success of the field trip, despite internal and external difficulties. The military authorities were also thanked for their assistance.

4.14 Problems of Access

Through the continuous contact with the companies it was found that western companies showed full cooperation in filling the questionnaire, and the Saudi companies showed less response, completing approx. 60% of the questionnaires. None of the japanese companies responded, and through contact with the Public Relations departments of these companies it became clear that the japanese managers were worried about filling in the questionnaires.

A meeting was arranged with the Deputy Manager of the first Japanese company to discuss the lack of cooperation. He explained that there had been no official letters from any government authority concerning the study. The researcher showed the Manager copies of the official letters from the University of King Abdul-Aziz. He referred to letters written by the Minister of Industry requesting cooperation, a copy of which was available to all the japanese companies in al Jubail City. The Deputy Manager replied that he had not come across such correspondence, and that he considered them essential for the company before they could participate in the study. The researcher promised to provide copies of the letters.

In the second Japanese company, the researcher met the Public Relations Officer, and found that the officer that he had previously met had been moved to a different section. The researcher had to introduce himself to the new officer and request his co-operation. The officer made some telephone enquiries and made a negative reply; following this an appointment was made with the Deputy Manager. The researcher discovered that only 25% of the questionnaires had been completed, for several reasons: first, all the official letters about the study were addressed to the President of the company (a Saudi national), who had not been available due to the death of his elder son; the new Public Relations Officer had not been properly informed about the

study and therefore there was no adequate follow-up; the researcher also noticed that there was some hesitancy in making decisions with regard to participating in the study, and the researcher had to explain that the study was purely academic and that all information would remain highly confidential. The researcher informed the Deputy Manager that a letter from the Ministry of Industry would be made available. The Manager expressed his satisfaction and was thanked for sparing his time for the meeting.

Similar problems were found with the Saudi companies, but the researcher could not find sufficient explanations for them not completing all the questionnaire forms. Most companies thought that a 60% response rate was quite satisfactory in the light of their experience with such studies.

Having evaluated the outcome and response to the researcher's visit to the Japanese and Saudi companies, the researcher wrote to the Minister of Industry requesting his attention to encourage the companies to cooperate fully with the study. Another official letter was sent to the companies and the researcher received the rest of the questionnaire forms after approximately two weeks.

4.15 Data Analysis

The information on the questionnaire forms was converted into a machine readable form, so that it could be statistically analyzed by computer. All the data were coded in data sheets. Many variables suited this form of presentation, for example type of factory ownership was coded as one punch for Saudi ownership, two punches for Japanese-Saudi joint ventures and three punches for western-Saudi joint ventures.

With the closed questions, the responses of the respondents were assigned numbers with a column and punched accordingly. Although there were few open questions, they took a longer time to be recoded, as they had to be recoded into set categories to make sense for statistical analysis.

The few unanswered questions were coded differently, as the use of blanks in coding was reported to be not advisable by Babbie (1973), and it was avoided for two reasons: first, this procedure faces a problem with quality control in the data processing, and secondly, there is a technical problem involving the use of blanks, as some computers assign a special value to blanks as part of their internal operation, which may confuse the results.

All data sheets were entered in the computer at Durham University Computer Centre. The data were checked for accuracy before final entry. This point was emphasised by Babbie (1973) where he stated that:

> *"No matter how, or how carefully, the data have been transferred to IBM cards, some errors are inevitable. Depending on the data-processing method, errors may result from incorrect coding, incorrect reading of written codes, incorrect sensing of blackened areas, and so forth. Even key punch verification is not perfect."*

The researcher consulted statisticians at Durham University Computer Centre and Durham University Statistics Department about the type of statistical tests most appropriate to analyzing the data, and whether parametric or non-parametric tests would be more convenient. Some authors argue that parametric tests should be used only when the data fulfils three conditions; for example, Bryinan and Cramer (1990) referred to these conditions:

"1. The level or scale of measurement is of equal interval or ratio scaling; 2. The distribution of the population is normal; and 3. The variance of both variables is equal or homogeneous."

Although the data did not meet these three conditions, the researcher was advised by some statisticians to use non-parametric tests because they are more suitable than parametric tests. The Statistical Package of social Science (SPSSX) was used to analyze the data in the Computer Centre of the University of Durham. Several statistical methods were used: descriptive statistic (means, standard deviations, etc) and non-descriptive statistical tests (one way analysis, Kruskal Wallis test, Man Whitney test and cross tabulation).

4.16 Summary

This chapter considers different ways of classifying research. Particular attention is given to the type (classification) based on the research design, and four types have been identified. The purpose of the research and the appropriate design are discussed. The model applied in this study are discussed along with the variables involved. The choice of research location, the collection methods, the appropriate population and the sample size are also discussed in detail.

The construction of the questionnaire design are also discussed, followed by emphasis of the role of the pilot study before conducting the final fieldwork.

Preparation for the fieldwork is considered, particularly having regard to negotiating access with government officers and managers who work for the companies.

Finally the processing and analysis of the data is examined, along with the differences between parametric and non-parametric techniques of data analysis, and the reasons for choosing one rather than the other.

The next chapter deals with the analysis of the responses to the questionnaires in gretaer detail.

Part Two

CHAPTER FIVE
Data Analysis

5.1 Introduction

This chapter deals with the analysis of the responses to the questionnaire, relating to management philosophy, management practice and production management, as indicated in Appendix 2.

Each section is discussed in greater depth comparing the Saudi, Japanese and western groups of companies.

The conclusions from data in this chapter are evaluated in the following chapter.

5.2 Data Analysis

5.2.1 General Background Information

This part of the questionnaire has been designed to provide general background information about the respondents and their factories. Respondents were questionned on the following five items: job title, number of years working in the factory, age of the factory, number of employees in each factory and percentage of Saudi and non-Saudi employees in each factory (see appendix 2 for more details about this section).

Even though most of the information was obtained through official documents from each factory, the researcher decided to request them again from the respondents of each factory as an additional source, to ensure the validity and relability of the data.

Tables one to five (Appendix 1) show the results of analysing Section One of the questionnaire. The analysis of Section One is discussed in more detail as follows:-

Item 1: Job Title

Each respondent from the three groups of factory ownership was requested to specify his job title. These jobs were classified later by the researcher into three levels. Level one contains jobs which are related to top management positions, level two contains jobs which are related to middle management positions and level three contains jobs which are related to unknown management positions.

The main reason for classifying job titles in this way is because the researcher was interested in determining the percentage of each management level involved in this research from each factory.

Analysis of Results (Tables 1A/1B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 0.0812 D.F. = 2 , P = 0.9602).

Overall,the table shows 54.1% of the total sample in the three groups were from the middle managers level, while 45.9% were from the top managers level. It can be concluded that both Japanese and western groups show no different information concerning job titles as compared to the Saudi group.

Item 2: Length of Time Managers' Employment in the Factory

Each respondent from the three groups of factory ownership was requested to specify the number of years he had been working in the factory.

Analysis of Results (Tables 2A/2B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 4.2356 P = 0.1203).

Overall, the table shows 53.7% of the total sample in the three groups indicated they had worked in their factories for a period around 5-10 years, while 46.3% indicated they were working for a period around 1-4 years.

It can be concluded that both Japanese and western groups show no different information concerning lenth of time managers'employment in factories as compared to the Saudi group.

Item 3: Age of Factories

Each respondent from the three groups of factory ownership was requested to specify his opinion about the average age of his factory in terms of years.

Analysis of Results (Tables 3A/3B) Appendix 1)

No significant differences were shown among the three groups (chi-sq. = 2.2315 P = 0.3277).

Overall, the table shows 63.6% of the total sample in the three groups indicated the average age of their factories around 8-10 years, while 32.7% indicated around 5-7 years and only 3.6% who indicated over 10 years.

An important observation about this table is that it explains why the length of time of managers' employment did not exceed ten years in most of the factories in the three groups (table 2A/2B) (Appendix 1).

It can be concluded that both Japanese and western groups show no different background information concerning the age of their factories as compared to the Saudi group.

Item 4: Total Number of Employees

Each respondent from the three groups of factory ownership was requested to specify his opinion about the total number of employees in his factory.

Analysis of Results (Tables 4A/4B/4C) (Appendix 1)

Significant differences was shown among the three groups (chi-sq.= 8.6710, p= 0.0131).

Implementing the Mann-Whitney test shows both the Japanese and the western groups have more employees than the Saudi group. This was shown by 45% for the western group who indicated their employees between 501 - 800 followed by 40% for the Japanese group and 31.7% for the Saudi group.

It can be concluded that both Japanese and western groups show different background information concerning total number of employees as compared to the Saudi group.

Item 5: Percentage of Saudi and Non-Saudi Employees

Each respondent from the three groups of factory ownership was requested to specify his opinion about the percentage of Saudi and non-Saudi employees in his factory.
Analysis of Results (Table 5) (Appendix 1)

No significant differences were shown among the three groups.

Overall, the table shows respondents from the three groups, indicated that 72.5% of their employees were considered to be Saudi and 27.5% non-Saudi.
It can be concluded that both Japanese and western groups show no different background information concerning percentage of Saudi and non-Saudi employees working in their factories as compared to the Saudi group.

5.2.2 Management Philosophy

Respondents were requested to specify their opinions regarding management philosophy concerning product quality in their factories. Sixteen items have been selected to compare the management philosophy among the three groups of factory ownership involved in this research. Appendix 2 shows part two of the questionnaire and Appendix 1 shows tables 6 to 21 which presents the results of the analysis of these sixteen items. A summary of this section is given at the end of this chapter.

Item 1: Management's Objectives

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern for manufacturing objectives.

Analysis of Results (Tables 6A/6B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 4.1835, D.F. = 4, P = 0.3817).

Overall, the table shows 45% of the total sample in the three groups indicated that customer satisfaction is considered to be the main priority objective in producing their products, while 34.9% indicated available resources is considered to be the main objective in producing their products and only 20.1% who indicated generatig high profit is considered to be the main objective.

An important point about this table is marketing opportunity was listed among those three choices shown in the table, but only 6 respondents who ticked it out of 160 which represent less than 4%. This choice has been excluding from the analysis due to recoding the data in order to have a valid chi-sq. value.

It can be concluded that both Japanese and western groups show no different management philosophy concerning management objectives as compared to the Saudi group.

Item 2: Average Age of Employees

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern for average age of employees.

Analysis of Results (Tables 7A/7B/7C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.=6.9452, p= 0.0310).

Implementing the Mann-Whitney test shows both the Japanese and the Saudi groups seem to employ younger employees than the western group. Where 50% of the Saudi group indicated that the average age of their employees between 26-30 years followed by 47.5% for the Japanese group and 38.3% for the western group.

It can be concluded that western group shows different management philosophy concerning average age of employees as compared to both the Japanese and the Saudi groups.

Item 3: Characteristics Considered to be Important in Selecting Employees

Each respondent from the three groups of factory ownership was requested to give his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern for the most important characteristics in selecting employees.

128

Analysis of Results (Tables 8A/8B) (Appendix 1)

Significant differences were shown among the three groups.

Implementing the Mann-Whitney test shows the Japanese group seems to give more emphasis to the characteristics of age, attitude and ability to co-operate with other as compared to both the western and the Saudi groups.

While both the western and the Saudi groups seem to give more emphasis to the characteristic of knowledge as compared to the Japanese group.

In contrast, the Saudi group seems to give more emphasis to the characteristic of degree of certification as compared to both Japanese and western groups. All three groups show a significant difference among each other in emphasising the important of skills in selecting their employees. The table suggests the western group is more concerned about the characteristic of skills as compared to both Japanese and Saudi groups.

It can be concluded that Japanese group shows different management philosophy regarding characteristics considered to be important in selecting employees as compared to both western and Saudi groups.

Item 4: Contribution of Employee's Attitude to Improve Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his

factory as indicated by management's concern for the contribution of employees' attitude to improve product quality.

Analysis of Results (Tables 9A/9B/9C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 15.9423 , P = 0.0003).

Implementing the Mann-Whitney test shows the Japanese group seems to give more emphasis to employees' attitude to improve product quality as compared to the other two groups. 45% of the Japanese group indicated their employees' attitude have an excellent contribution to improve product quality as compared to 31.7% and 16.7% respectively for western and Saudi groups.

It can be concluded that the Japanese group shows different management philosophy concerning employees' attitude to improve product quality as compared to both western and Saudi groups.

Item 5: Labour or Capital Intensive

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by whether the factory was considered labour or capital intensive.

Analysis of Results (Tables 10A/10B/10C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq. = 11.7885 p= 0.0028).

Implementing the Mann-Whitney test shows both the western and Saudi groups give more emphasis to the capital approach than the labour approach to improve product quality as compared to the Japanese group. This was indicated by 58.3% for the Saudi group followed by 46.7% for the western group and 25% for the Japanese group.

It can be concluded that Japanese group shows different management philosophy concerning applied labour or capital approaches to improve product quality as compared to both western and Saudi groups.

Item 6: The Extent to which Management treats Managers as a Family

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern for treating their managers as a family.

Analysis of Results (Tables 11A/11B) (Appendix 1)

Significant differences were shown among the three groups (Chi-sq. = 11.2875 p= 0.0035).

Implementing the Mann-Whitney test shows the Japanese group treats their managers more in this way as compared to both western and Saudi groups. Where 47.5% of the

Japanese group indicated their management treats managers very good followed by 33.4% and 26.7% respectively for the Saudi and the western groups.

It can be concluded that the Japanese group shows different management philosophy concerning treating their managers as a family as compared to both western and Saudi groups.

Item 7: The Extent to which Management treats Workforce as a Family

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern for treating their workforce as a family.

Analysis of Results (Tables 12A/12B/12C) (Appendix 1)

Significant differences were shown among the three groups (Chi-sq.= 20.455 , p= 0.0000).

Implementing the Mann-Whitney test shows the Japanese group treats their workfore better than both western and Saudi groups. This was shown by 42.5% for the Japanese group who indicated their management treats workforce very well, followed by 13.3% for the Saudi group and 11.7% for the western group.

It can be concluded that the Japanese group shows different management philosophy concerning treating their workforce as a family as compared to both western and Saudi groups.

Item 8: Relationships between Labour and Management

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern about relationships between labour and management.

Analysis of Results (Tables 13A/13B/13C) (Appendix 1)

Significant differences were shown among the three groups (Chi-sq.= 6.5032 , p= 0.0287).

Implementing the Mann-Whitney test shows the Japanese group shows a better relationships between their labours and management as compared to the other two groups. Where 55% of the Japanese group indicated they have a good relationship as compared to 41.7% and 38.3% respectively for the Saudi and and the western groups. This good relationship in the Japanese group seems to be a reflection of the way their management treats both labours and managers as a family which has been shown in both previous tables (11 and 12).

It can be concluded that the Japanese group shows different management philosophy concerning their relationships between labour and management as compared to both western and Saudi groups.

133

Item 9: The Extent of Customer Involvement in Determing the Quality of Product

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern for customer involvement in determining the product quality.

Analysis of Results (Tables 14A/14B/14C) (Appendix 1)

Significant differences were shown among the three groups (Chi-sq.= 31.0891 p= 0.0000).

Implementing the Mann-Whitney test shows the Japanese group involve their customers in determining product quality more than the other two groups. Where 50% of the Japanese group indicated their customers were well involved followed by 25% who indicated fully involved as compared to 28.3% and 8.4% respectively for the western group and 16.6% and 8.4% respectively for the Saudi group.

It can be concluded that the Japanese group shows a different management philosophy concerning involving customers in determing product quality as compared to both western and Saudi groups.

Item 10: Suppliers' Contribution to Improvement of Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern for suppliers' contribution to improvement of product quality.

Analysis of Results (Tables 15A/15B/15C) (Appendix 1)

Significant differences were shown among the three groups (Chi-Sq. = 5.8911 p= 0.0360).

Implementing the Mann-Whitney test shows the suppliers' contribution to improve product quality is more in the Japanese group than the other two groups. This was shown by 60% for the Japanese group who indicated their suppliers were helpful in improving product quality followed by 41.6% for the western group nd 35.5% for the Saudi group.

It can be concluded that the Japanese group shows different management philosophy concerning their suppliers' contribution to improve product quality as compared to both western and Saudi groups.

Item 11: Competition Criteria

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern for competition criteria.

Analysis of Results (Tables 16A/16B) (Appendix 1)

No significant differences were shown among the three groups (Chi-sq.= 2.1729 D.F. = 2 , P = 0.3374).

Overall, the table shows 65.2% of the total sample in the three groups indicated competition was based on quality of product and 34.8% indicated based on product price.

It can be concluded that both Japanese and western groups show no different management philosophy concerning competition criteria as compared to the Saudi group.

Item 12: The Extent to which Quality has Contributed to the Success of the Factory

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern for the extent to which quality has contributed to the success of the factory.

Analysis of Results (Tables 17A/17B/17C) (Appendix 1)

No significant differences were shown among the three groups (Chi-Sq. = 4.8189 , P = 0.0899).

Overall, the table shows 47.5% of the total sample in the three groups indicated that quality has a very good contribution to the success of their factories,followed by

40.6% who indicated good, 8.1% fair, 3.2% little and only 0.6% who indicated no contribution at all.

It can be concluded that both Japanese and western groups show no different management philosophy concerning the extent to which quality has contributed to the success of the factory as compared to the Saudi group.

Item 13: The Extent to which it is Believed that the Management Invests in Improving Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern about investment in product quality.

Analysis of Results (Tables 18A/18B/18C) (Appendix 1)

Significant differences were shown among the three groups (Chi-Sq.= 6.6357 , p= 0.0362).

Implementing the Mann-Whitney test shows both Japanese and western groups seem to invest more than Saudi group in improving product quality. This was shown by 50% for the Japanese group who indicated their management invest well in improving product quality followed by 35% for the western group and 20% for the Saudi group.

It can be concluded that both Japanese and western groups show different management philosophy concerning management investment in improving product quality as compared to the Saudi group.

Item 14: Source of Management Investment in Improving Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern for the sources of investment in improving product quality.

Analysis of Results (Tables 19A/19B) (Appendix 1)

Significant differences were shown among the three groups.

The table shows both the Japanese and the western groups seem to invest more in technology as compared to the Saudi group. This was indicated by 58.3% for the western group followed by 50% for the Japanese group and 36.6% for the Saudi group.

The table also indicates no significant differences were shown among the three groups in terms of their investment in their managers.

Finally, the table shows the Japanese group invests more in training employees, marketing research and suppliers development as compared to both western and Saudi groups. This was shown by 60%, 47.5%, and 15% respectively for the

Japanese group followed by 43.3%, 13.3% and 8.3% respctively for the Western group and 20%, 15%, 5% respectively for the Saudi group.

It can be concluded that both Japanese and western groups show different management philosophy concerning source of management investment in improving product quality as compared to the Saudi group.

Item 15: Factors Considered as Making an Important Contribution to Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern about factors considered as making an important contribution to product quality.
Analysis of Results (Tables 20A/20B) (Appendix 1)

Significant differences were shown among the three groups.

Implementing the Mann-Whitney test shows both the western and the Saudi groups give more emphasis to the Managers factor to improve product quality as compared to the Japanese group. While the Japanese group seems to give more emphasis to the Customers and Market Research factors as compared to the other two groups.

The table also suggests that the Saudi group is less concerned about the technology and workforce factors as compared to the other two groups.

In contrast both the Saudi and the Japanese groups seem to be more concerned about the competition factor as compared to the western group.

It can be concluded that Japanese group shows more different management philosophy regarding factors considered making an important contribution to product quality as compared to both Wesrern and Saudi groups.

Item 16: Effect of Government Attitude on Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion about the management philosophy concerning product quality in his factory as indicated by management's concern for the effect of government attitude on product quality.

Analysis of Results (Tables 21A/21B/21C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 10.6692 , p= 0.0048).

Implementing the Mann-Whitney test shows both Japanese and western groups were more sceptical about the government attitude to improve product quality as compared to the Saudi group. This was shown by 48.3.% for the Saudi group who indicated the government attitude was helpful to improve product quality, followed by 26.7% for the western group and 25% for the Japanese group.

It can be concluded that both Japanese and western groups show a different management philosophy concerning the effect of the government attitude on product quality as compared to the Saudi group.

5.2.3 Management Practices

Respondents were requested to specify their opinions regarding management practices concerning product quality in their factories. Forty items have been selected to compare the management practices among the three groups of factory ownership involved in this research. Appendix 2 shows part three of the questionnaire and Appendix 1 shows tables 25 to 62 which presents the results of the analysis of those forty items. A summary of the analysis of this section is given at the end of this chapter.

Item 1: Management's Plans for Improving Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices concerning product quality in his factory as indicated by management's plans for improving product quality.

Analysis of Results (Tables 22A/22B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 9.1256 D.F. = 6 , P = 0.1666).

Overall, the table shows 39.4% of the total sample in the three groups indicated their management applied medium term planning while 36.3% indicated short term and only 14.4% who indicated long term planning.

141

It can be concluded that both Japanese and western groups show no different management practices concerning plans for improving product quality as compared to Saudi group.

Item 2: Employees' Understanding of Quality Objectives

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices concerning product quality in his factory as indicated by employees' understanding of quality objectives.

Analysis of Results (Tables 23A/23B) (Appendix 1)

No significant differences were shown among the three group (chi-sq.= 0.8379 D.F. = 2, P = 0.6577).

Overall, the table shows 62.3% of the total sample in the three groups indicated their employees understand the main objectives of product quality, while 37.7% indicated they do not understand them.

It can be concluded that both Japanese and western groups show no different management practices concerning employees' understanding the main objectives of product quality as compared to the Saudi group.

Item 3: Establishment of Quality Objectives

Each respondent from the three groups of factory ownership was requested to specify his opinion of the management practice concerning product quality in his factory as indicated by establishment of quality objectives.

Analysis of Results (Tables 24A/24B) (Appendix 1)

Significant differences were shown among the three groups.

Although the three groups indicated those objectives were established with consultation but there was a difference among them in the extent of consultation.

The Saudi group seems to give more emphasis to consult their top managers as compared to the other two groups. This was indicated by 23.3% for the Saudi group followed by 0% for both the Japanese and the western groups.

While the western group seems to give more emphasis to consult managers in different departments as compared to the other two groups. This was indicated by 41.7% for the western group followed by 21.7% for the Saudi group and 20% for the Japanese group.

In contrast, the Japanese group seems to implement more full consultation with their employees as compared to the other two groups. This was indicated by 50% for the Japanese group followed by 25% for the western group and 16.7% for the Saudi group.

It can be concluded that both Japanese and western groups show different management practices concerning establishment of quality objectives as compared to the Saudi group.

Item 4: Source of Information for Establishing Quality Objectives

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices concerning product quality in his factory as indicated by source of information for establishing quality objectives.

Analysis of Results (Tables 25A/25B) (Appendix 1)

Significant differences were shown among the three groups.

The table shows both the Japanese and the Saudi groups seem to give more emphasis to the sources of discussion with their employees and unwritten policy emphasized by their top management as compared to the western group. This was indicated by 57.5% and 62.5% respectively for the Japanese group followed by 50% and 45% respectively for the Saudi group and 35% and 18.3% respectively for the western group.

The western group seems to give more emphasis to the source of manual policy for establishing their objectives as compared to the other two groups. This was indicated by 55% for the western group followed by 22.5% for the Japanese group and 16.7% for the Saudi group.

In contrast, the Japanese group seems to give more empasis to the source of employees feelings as working in group as compared to both western and Saudi groups. This was indicted by 55% for the Japanese group followed by 30% and 10% respectively for both Saudi and western groups.

It can be concluded that the western group shows different management practices concerning the source of information for establishing quality objectives as compared to both Japanese and Saudi groups.

Item 5: Top Management Involving in Planning for Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices concerning product quality in his factory as indicated by top management involvement in planning for product quality improvement.

Analysis of Results (Tables 26A/26B/26C) (Appendix 1)

Significant differences were shown among the three groups (Chi-sq.= 6.6652 , p= 0.0035).

Implementing the Mann-Whitney test shows the top management in Saudi group is less involved in planning for product quality as compared to the other two groups. This was indicated by 52.5% for the Japanese group followed by 41.7% for the western group and 31.6% for the Saudi group.

It can be concluded that both Japanese and western groups show different management practices concerning involving their top management in planning for product quality improvement as compared to Saudi group.

Item 6: Measures to Implement Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices concerning product quality in his factory as indicated by measures to implement product quality.

Analysis of Results (Tables 27A/27B) (Appendix 1)

Significant differences were shown among the three groups.

The table shows both Saudi and Japanese groups applied more internal seminars for their managers to improve product quality as compared to the western group. This was indicated by 35% for the Japanese group followed by 28.3% for the Saudi group and only 6.7% for the western group.

The table also indicates both the Japanese and the Saudi groups rely more on internal training for their employees as compared to the western group. This was indicated by 75% for the Japanese group followed by 60% for the Saudi group and 45% for the western group.

In contrast, the western group seems to give more emphasis to training their employees abroad as compared to the other two groups. Where this was indicated by

146

91.7% for the western group followed by 47.5% for the Japanese group and only 20% for the Saudi group.

It can be concluded that the western group shows different management practices concerning measures to implement product quality as compared to both Japanese and Saudi groups.

Item 7: Top Management Committment to Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices concerning product quality in his factory as indicated by top management committment to product quality improvement.

Analysis of Results (Tables 28A/28B/28C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 9.7019 , p= 0.0075).

Implementing the Mann-Whitney test shows the top management committment to product quality in Japanese group is higher than those in both western and Saudi groups. This was indicated by 55% for the Japanese group who indicated their management committment to product quality is considered to be good followed by 46.7% and 41.7% respectively for western and Saudi groups.

It can be concluded that the Japanese group shows different management practices concerning top management committment to product quality as compared to both western and Saudi groups.

Item 8: Decision-Making Style

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by decision-making style.

Analysis of Results (Tables 29A/29B) (Appendis 5)

Significant differences were shown among the three groups (chi-sq.= 34.4384 , D.F. = 8 , P = 0.0009).

The table shows the majority of the three groups indicated that decisions were made based on consultation, however the table suggests that the Japanese group consults its employees in decision-making more than western and Saudi groups. This was indicated by 55% for the Japanese group followed by 31.6% and 20% respectively for both western and Saudi groups.

It can be concluded that the Japanese group shows different management practices concerning decision-making style as compared to both western and Saudi groups.

Item 9: Involvement of Other Departments in Decision-Making concerning Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by involvement of other departments in decision-making concerning product quality.

Analysis of Results (Tables 30A/30B/30C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 7.8702 , P = 0.0019).

Implementing the Mann-Whitney test shows both Japanese and western groups involve their departments in decision-making more than the Saudi group. This was indicated by 37.5% for the Japanese group followed by 30% for the western group and 20% for the Saudi group.

It can be concluded that both Japanese and western groups show different management practices concerning involvement of other departments in decision-making concerning quality as compared to the Saudi group.

Item 10: Time Spent in Decision-Making Procedure concerning Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by time spent in decision-making procedure concerning product quality

Analysis of Results (Tables 31A/31B/31C) (Appendix 1)

Significant Differences were shown among the three groups (chi-sq.= 9.0747 , p= 0.0107).

Implementing the Mann-Whitney test shows both Japanese and Saudi groups spent more time in decision-making procedure as compared to the western group. This was shown by 66.7% for the Japanese group and 50.9% for the Saudi group who indicated they spent more time in decision-making procedure compared to 38% for the western group.

It can be concluded the Japanese and Saudi groups show different management practices concerning time spent in decision-making procedure concerning product quality as compared to the western group.

Item 11: Time Spent in Decisions Implementation

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by time spent in implementing decisions concerning product quality

Analysis of Results (Tables 32A/32B/32C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 16.1565 , p= 0.0007).

Implementing the Mann-Whitney test shows both western aud Saudi groups spent more time in implementing their decisions as compared to the Japanese group. This

150

was shown by 77.3% for the Saudi group who indicated they spent a long time followed by 58.3% for the western group and 30% for the Japanese group.

It can be concluded that both the western and the Saudi groups show different management practices concerning time spent in implementing their decisions as compared to the Japanese group.

Item 12: Structure of Factories

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by structure of factories.

Analysis of Results (Tables 33A/33B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 2.7317 D.F. = 2, P = 0.2552)

Overall,the table shows 82.9% of the total sample in the three groups indicated the structure of their factories formal, while 17.1% indicated informal.

It can be concluded that both Japanese and western groups show no different management practices concerning structure of their factories as compared to the Saudi group.

Item 13: Number of Departments

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by number of departments.

Analysis of Results (Tables 34A/34B) (Appendix 1)

Significant differences were shown among the three groups (chi-sq. = 45.1569 D.F. = 4, P = 0.0000).

The table suggests the western group have more number of departments as compared to both Japanese and Saudi groups. This was shown by 51.7% for the western group who indicated they have many departments in their factories followed by 21.7% for the Saudi group and only 10% for the Japanese group.

It can be concluded that the western group shows different management practices concerning number of departments as compared to both Japanese and Saudi groups.

Item 14: Interaction between Departments

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by interaction between departments.

Analysis of Results (Tables 35A/35B) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 6.6593 , D.F. = 2, P = 0.0358).

The table shows the interaction between departments is more co-operative in Saudi and Japanese groups as compared to the western group. This was indicated by 56.7% for the Saudi group who shows their departments very co-operative followed by 47.5% for the Japanese group and 33.3% for the western group.

It can be concluded that the western group shows different management practices concerning the interaction between departments as compared to both Japanese and Saudi groups.

Item 15: Occurrance of Discussion of Objectives

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by occurrance of discussion of objectives.

Analysis of Results (Tables 36A/36B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 3.6770 D.F. = 2, P = 0.1591).

Overall, the table shows 93.1% of the total sample in the three groups indicated that their management discussed their objectives, while 6.9% indicated they do not discuss them.

It can be concluded that both the Japanese and the western groups show no different management practices concerning occurance of discussion of objectives as compared to the Saudi group.

Item 16: Discussion of Objectives with Other Employees

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by discussion of objectives with other employees.

Analysis of Results (Tables 37A/37B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 6.4491 D.F. = 4, P = 0.1680).

Overall, the table shows 60.2% of the total sample in the three groups indicated that they discuss those objectives within different departments, while 24.7% indicated within relevant departments and only 15.6% who indicated discussion within the same departments.

It can be concluded that both the Japanese and the western groups show no different management practices concerning discussion of objectives with other employees as compared to the Saudi group.

Item 17: Reasons for Discussing Objectives with Other Employees

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by reasons for discussing objectives with other employees.

Analysis of Results (Tables 38A/38B) (Appendix 1)

Significant differences were shown among the three groups (chi-sq. = 13.8020 , D.F. = 2, P = 0.0010).

The table shows both the Japanese and the Saudi groups were more concerned about the whole factory as compared to the western groups. This was indicated by 88.5% for the Saudi group followed by 71.8% for the Japanese and 50% for the western group.

In contrast, the western group was more concerned about departments as compared to the other two groups. This was indicated by 50% for the western group followed by 28.2% for the Japanese group and 11.5% for the Saudi group.

It can be concluded that the western group shows different management practices concerning reasons for discussing objectives with other employees as compared to both Japanese and Saudi groups.

Item 18: Reasons for Not Discussing Objectives with Other Employees

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by reasons for not discussing objectives with other employees.

Analysis of Results (Tables 39A/39B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 9.9194 D.F. = 6, P = 0.1281).

It can be concluded that both the Japanese and the western groups show no different management practices concerning reasons for not discussing objectives with other employees as compared to the Saudi group.

Item 19: Introduction of Modification to Original Plan

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by introduction of modifications to original plan.

Analysis of Results (Tables 40A/40B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 1.1338 P = 0.5673).

Overall, the table shows 61.9% of the total samples in the three groups indicated their management sometimes introduce modification to their original plans, while 25.6% indicated they rarely do it and only 12.5 % indicated they often do it.

It can be concluded that both Japanese and western groups show no different management practices concerning introduction of modification to original plan as compared to the Saudi group.

Item 20: Implementation of Modification to Original Plan

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by implementation of modification to original plan.

Analysis of Results (Tables 41A/41B) (Appendix 1)

Significant differences were shown among the three groups (chi-sq. = 25.1812 D.F. = 8, P = 0.0001).

The table shows the Saudi group seems to give more emphasis to top managers to implement those modification as compared to the other two groups. This was indicated by 33.3% for the Saudi group followed by 16.6% for the western group and 5% for the Japanese group.

The western group seems to give more emphasis to the affected managers as compared to the other two groups. This was indicated by 50% for the western group followed by 30% for the Japanese group and 28.3% for the Saudi group.

In contrast, the Japanese group seems to give more emphasis to all employees as compared to both western and Saudi groups. This was indicated by 57.5% for the Japanese group followed by 20% for the western group and 10% for the Saudi group.

It can be concluded that both Japanese and western groups show different management practices concerning their implementations of modifications to original plan as compared to the Saudi group.

Item 21: Attitude of Managers towards Modification to Original Plan

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding management practices in his factory as indicated by attitude of managers towards modifications to original plan.

Analysis of Results (Tables 42A/42B/42C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq. = 9.5575 , p= 0.0084).

Implementing the Mann-Whitney test shows the managers in both western and Saudi groups seems to be more resistible towards modifications than the Japanese group. This was shown by 68.3% for the Saudi group who indicated managers apply some resistance towards modifications followed by 55% for the western group and 37% for the Japanese group.

It can be concluded that the Japanese group shows different management practices concerning attitude of managers towards modification to original plan as compared to both western and Saudi groups.

Item 22: Attitude of Workforce towards Modifications to Original Plan

Each respondent from the three groups of factory ownership was requested to give his opinion regarding the management practices in his factory as indicated by attitude of the workforce towards modifications to original plan.

Analysis of Results (Tables 43A/43B/43C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq. = 8.5623 , p= 0.0138).

Implementing the Mann-Whitney test shows the workforce in both western and Saudi groups seem to offer more resistance towards modifications than the Japanese group. This was shown by 71.7% for the Saudi group who indicated workforce apply some resistance towards modifications followed by 68.3% for the western group and 47.5% for the Japanese group.

It can be concluded that the Japanese group shows different management practices concerning attitude of workforce towards modification to original plan as compared to both western and Saudi groups.

Item 23: Understanding of Authority and Responsibility Terms as Individuals

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by understanding of authority and responsibility terms as individuals.

Analysis of Results (Tables 44A/44B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 0.9784 P = 0.6131).

Overall, the table shows 49.4% of the total sample in the three groups indicated understanding of authority and responsibility terms as individuals were sligtly clear, while 43.1% indicated extremely clear and only 7.5% who indicated ambigous.

It can be concluded that both Japanese and western groups show no different management practices concerning understanding of authority and responsibility terms as individuals as compared to the Saudi group.

Item 24: Understanding of Authority and Responsibility Terms as Groups

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by understanding of authority and responsibility terms as groups.

Analysis of Results (Tables 45A/45B/45C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 12.6865 , p= 0.0018).

Implementing the Mann-Whitney test shows the Japanese group seems to give more emphasis to the understanding of authority and responsibility terms as groups as compared to the other two groups. This was shown by 55% for the Japanese group

who indicated the terms of authority and responsibility as groups were extremely clear, followed by 35% for the western group and 26.7% for the Saudi group.

It can be concluded that the Japanese group shows different management practices concerning understanding of authority and responsibility terms as groups as compared to both western and Saudi groups.

Item 25: The Extent of Delegating Authority and Responsibility to Improve Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by the extent of delegating authority and responsibility to improve product quality.

Analysis of Results (Tables 46A/46B/46C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq. = 14.9736 p= 0.0006).

Implementing the Mann-Whitney test shows the Japanese group delegate more authority and responsibility to improve product quality as compared to the other two groups. This was shown by 65% for the Japanese group who indicated their management were delegating both authority and responsibility to very great extent to improve product quality followed by 45% for the western group and 38.8% for the Saudi group.

It can be concluded that the Japanese group shows different management practices concerning the extent of delegating authority and responsibility to improve product quality as compared to both western and Saudi groups.

Item 26: Reasons for Not Delegating Authority and Responsibility

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by reasons for not delegating authority and responsibility.

Analysis of Results (Table 47A/47B) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 93.9456 , D.F. = 6 , P = 0.0000).

The table shows 68.5% of the western group indicated the main reasons for not delegating authority and responsibility is because the top management do not want to relinquish control followed by 18.3% for the Saudi group and 5% for the Japanese group.

While 73.3% of the Saudi group indicated top management do not have confidence in their employees followed by 24.1% for the western group and 7.5% for the Japanese group.

It can be concluded that both western and Saudi groups show different management practices concerning reasons for not delegating authority and responsibility as compared to the Japanese group.

Item 27: Form of Communication

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by form of communication.

Analysis of Results (Tables 48A/48B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 1.5194 D.F. = 2, P = 0.4678).

The table shows 67.5% of the total sample in the three groups indicated that their management applied formal communication at work, while 32.5% indicated they applied informal communication.

It can be concluded that both Japanese and western groups show no different management practices concerning form of communication as compared to the Saudi group.

Item 28: Means of Communication Applied

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by means of communication applied.

Analysis of Results (Tables 49A/49B) (Appendix 1)

Significant differences were shown among the three groups.

Implementing the Mann-Whitney test shows the western group seems to give more emphasis to the means of mail and discussion in the coffee room as compared to both the Japanese and the Saudi groups.

While both the Japanese and the Saudi groups seem to give more emphasis to the means of regular meeting and telephone calls as compared to the western group.

In contrast, significant differences were shown among the three groups regarding the use of morning meetings; the Japanese group seems to apply this method more than both western and Saudi groups.

It can be concluded that the western group shows different management practices concerning the means of communication applied as compared to both Saudi and Japanese groups.

Item 29: Reasons for Contact during Work Time

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by reasons for contact during work time.

Analysis of Results (Tables 50A/50B) (Appendix 1)

Significant differences were shown among the three groups.

The table shows the Saudi group considered contact during work time is daily routine more than both the Japanese and the western groups.

While both the Japanese and the western groups considered it as a method to co-ordinate between employees more than the Saudi group.

In contrast, the Japanese group considered contact during work time as a method to emphasis the team work between employees more than the other two groups.

It can be concluded that both Japanese and western groups show different management practices concerning their reasons for contacts during work time as compared to the Saudi group.

Item 30: Form of Employees Motivation

Each respondent from the groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by form of employees motivation.

Analysis of Results (Tables 51A/51B) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 10.8985 , D.F. = 2, P = 0.0043).

The table shows the Japanese group seems to give more emphasis to the group motivation approach as compared to both the western and the Saudi groups. This was

indicated by 65% for the Japanese group followed by 35% for the Saudi group and 33.3% for the western group.

In contrast, both the western and the Saudi groups seems to give more emphasis to the individual motivation approach as compared to the Japanese group. This was indicated by 66.7% for the western group followed by 65% for the Saudi group and 35% for the Japanese group.

It can be concluded that the Japanese group shows different management practices concerning forms of employees motivation as compared to both western and Saudi groups.

Item 31: Motivation Applied

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding management practices in his factory as indicated by motivation applied.

Analysis of Results (Tables 52A/52B/52C) (Appendix 1)

Significant differences were shown among the three groups.

The table shows the Saudi group seems to give more emphasis to the motives of special recognition, quick promotion and more authority delegation as compared to both Japanese and western groups.

While the western group seems to give more emphasis to the motive of cash received as compared to the other two groups.

In contrast, the Japanese group seems to give more emphasis to the motives of encouraging team work and encouraging employees' involvement as compared to both western and Saudi groups.

It can be concluded that both Japanese and western groups show different management practices concerning motivation applied as compared to Saudi group.

Item 32: Investment in Employees Development

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by investment in employees development.

Analysis of Results (Tables 53A/53B) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 14.8208 , p= 0.0006)

Implementing the Mann-Whitney test shows the Japanese group seems to invest more in developing their employees as compared to both western and Saudi groups. This was indicated by 42.5% for the Japanese group who shows their management invest highly in developing their employees followed by 30% for the western group and 26.7% for the Saudi group.

It can be concluded that the Japanese group shows different management practices concerning investment in employees development as compared to both the western and the Saudi groups.

Item 33: Type of Training Provided to New Employees

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by the type of training provided to new employees.

Analysis of Results (Tables 54A/54B) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 17.2407 , D.F. = 2 , P = 0.0002).

The table shows both Saudi and western groups seem to give more emphasis to the specific training for new employees as compared to the Japanese group. This was indicated by 85% for the western group followed by 66.7% for the Saudi group and 47.5% for the Japanese group. In contrast the Japanese group seems to give more emphasis to the general training for new employees as compared to the other two groups. This was indicated by 52.5% for the Japanese group followed by 33.3% and 15% respectively for Saudi and western groups.

It can be concluded that the Japanese group shows different management practices concerning type of training provided to new employees as compared to both Saudi and western groups.

Item 34: Time Spent Training New Employees

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by time spent training new employees.

Analysis of Results (Tables 55A/55B/55C) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 0.8531 P = 0.7796).

Overall, the table shows 52.5% of the total sample in the three groups indicated their management spent about six months training new employees followed by 24.4% who indicated one month, 21.2% who indicated more than six months and only 1.9% who indicated one week.

It can be concluded that both Japanese and western groups show no different management practices concerning time spent training new employees as compared to the Saudi group.

Item 35: Maintaining Product Standard

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by the policy of maintaining product standard.

Analysis of Results (Table 56) (Appendix 1)

No differences were shown among the three groups.

It can be concluded that both Japanese and western groups show no different management practices concerning maintaining product standard as compared to the Saudi group.

Item 36: Level of Product Standard

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by the level of product standard.

Analysis of Results (Tables 57A/57B) (Appendix 1)

No significant differences were shown among the three groups.

It can be concluded that both Japanese and western groups show no different management practices concerning level of product standard as compared to the Saudi group.

Item 37: Application of Statistical Quality Control

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by application of statistical quality control.

Analysis of Results (Tables 58A/58B/58C) (Appendix 1)

Significant differences were shown among the three groups.

Implementing the Mann-Whitney test shows both Japanese and western groups applied more statistical quality control than the Saudi group. This was shown by 40% for the Japanese group who indicated their management applied statistical quality control to very great extent followed by 36.7% for the Westrn group and 25% for the Saudi group.

It can be concluded that both Japanese and western groups show different management practices concerning application of statistical quality control as compared to the Saudi group.

Item 38: Number of Inspectors

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by number of inspectors.

Analysis of Results (Tables 59A/59B/59C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 11.2589 , p= 0.0036).

Implementing the Mann-Whitney test shows the Saudi group seems to use more inspectors as compared to both Japanese and western groups. This was indicated by 41.7% for the Saudi group followed by 26.7% for the western group and only 7.5% for the Japanese group.

It can be concluded that both Japanese and western groups show different management practices concerning number of inspectors as compared to Saudi group

Item 39: Methods and Extent of Product Inspection

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by methods and extent of product inspection.

Analysis of Results (Tables 60A-60B-60C-60D-60E-60F) (Appendix 1)

Significant differences were shown among the three groups.

Implementing the Mann-Whitney test shows the Japanese group seems to give more emphasis to the method of employees self control as compared to both Saudi and western groups. This was shown by 85% for the Japanese group who indicated they always rely on employees self control followed by 43.3% for the western group and 36.7% for the Saudi group.

No difference were shown among the three groups in using internal professional inspectors.

In contrast both the western and the Saudi groups seem to give more emphasis to the external professional inspectors as compared to the Japanese group. This was shown by 55% for the Saudi group who indicated they sometimes rely on external professional inspectors, followed by 43.3% for the western group and 25% for the Japanese group.

It can be concluded that the Japanese group shows different management practices concerning methods and extent of product inspection as compared to both western and Saudi groups.

Item 40: Action Taken To Improve Product Quality

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the management practices in his factory as indicated by action taken to improve product quality.

Analysis of Results (Tables 61A/61B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 3.2729 P = 0.1947).

The table shows 61.8% of the total sample in the three groups indicated that their management apply fast action to improve product quality, while 38.2% indicated they apply slow action to improve product quality.

173

It can be concluded that both Japanese and western groups show no different management practices concerning action taken to improve product quality as compared to the Saudi group.

5.2.4 Production Management

Respondents were requested to specify their opinions regarding production management concerning product quality in their factories. Eighteen items have been selected to compare the production management among the three groups of factory ownership involved in this research. Appendix 2 shows section four of the questionnaire and Appendix 1 shows tables 62 to 79 which presents the results of the analysis of those eighteen items.

Item 1: Location of Product Design

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management in his factory as indicated by location of product design.

Analysis of Results (Tables 62A/62B) (Appendix 1)

No significant differences were shown among the three groups.

It can be concluded that both the Japanese and the western groups show no different production management practices concerning the location of product design as compared to the Saudi group.

Item 2: Time Spent in Product Design Cycle

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by time spent in product design cycle.

Analysis of Results (Tables 63A/63B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 2.3933 P = 0.3022).

The table shows 51.8% of the total sample in the three groups indicated that the time management spent in product design cycle is considered to be fair followed by 22.5% who indicated long time, 13.2% who indicated short time and 12.5% who indicated very short time.

It can be concluded that both the Japanese and the western groups show no different production management practices concerning time spent in product design as compared to the Saudi group.

Item 3: Number of Running Product Tests

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by times of running product tests.

Analysis of Results (Tables 64A/64B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 4.5225 P = 0.1042).

Overall,the table shows 40.6% of the total sample in the three groups indicated the times of running product tests is considered to be reasonable, followed by 33.1% who indicated few, 20% who indicated many and only 6.3% who indicated their management never run product tests.

It can be concluded that both Japanese and western groups show no different production management practices concerning times of running product tests as compared to the Saudi group.

Item 4: Reasons for Not Maintaining Regular Product Tests

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by reasons for not maintaining regular product tests.

Analysis of Results (Tables 65A/65B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 8.2608 D.F. = 6 , P = 0.2196).

The table shows 55.5% of the total sample in the three groups indicated the main reasons for not maintaining regular product tests were their management were concerned about leading time followed by 18.8% who indicated cost of pilot testing, 14.8% who indicated other reasons which had not been specified in the questionnaire and only 10.9% who indicated allowing defect rate.

It can be concluded that both Japanese and western groups show no different production management practices concerning reasons for not maintaining regular product tests as compared to the Saudi group.

Item 5: Source of Raw Material

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by source of raw material.

Analysis of Results (Tables 66A/66B) (Appendix 1)

Significant differences were shown among the three groups.

Implementing the Mann-Whitney test shows both western and Saudi groups give more emphasis to US/UK suppliers, while the Japanese group seems to give more emphasis to the Japanese suppliers.

It can be concluded that Japanese group shows different production management practices concerning source of raw materials as compared to both western and Saudi groups.

Item 6: Proportion of Manufacturing Cost

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by proportion of manufacturing cost.

178

Analysis of Results (Tables 67A/67B) (Appendix 1)

Significant differences were shown among the three groups.

Implementing the Mann-Whitney test shows labour cost in Japanese and western groups is slightly higher than Saudi group. Manaufacturing overhead cost in the Saudi group is higher than those in both Japanese and western groups.

In contrast, no differences were shown among the three groups regarding raw material cost.

It can be concluded that both Japanese and western groups show different production management practices concerning proportion of manufacturing cost as compared to the Saudi group.

Item 7: Number of Factory Suppliers

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by the number of factory suppliers.

Analysis of Results (Tables 68A/68B/68C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 21.1678 P = 0.0000).

179

Implementing the Mann-Whitney test shows the Japanese group deals with a smaller number of suppliers as compared to the other two groups. This was shown by 72.5% for the Japanese group who indicated their management deal with about five suppliers followed by 36.7% for the Saudi group and 31.7% for the western group.

It can be concluded that the Japanese group shows different production management practices concerning dealing with the number of suppliers as compared to both western and Saudi groups.

Item 8: Suppliers' Duration of Business Contact with Factories

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by suppliers duration of business contact with factories.

Analysis of Results (Tables 69A/69B/69C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq = 22.9576 , p= 0.0004).

Implementing the Mann-Whitney test shows the Japanese group stay longer with their suppliers as compared to western and Saudi groups. This was shown by 87% for the Japanese group who indicated they have been working with their suppliers for a long time followed by 55% for the Saudi group and 38.3% for the western group.

It can be concluded that the Japanese group shows different production management practices concerning suppliers' duration of business contact with factories as compared to both western and Saudi groups.

Item 9: Bases for Selecting Suppliers

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by bases for selecting suppliers.

Analysis of Results (Tables 70A/70B) (Appendix 1)

Significant differences were shown among the three groups.

Implementing the Mann-Whitney test shows the Japanese group seems to give more emphasis to supplier quality performance and mutual trust in selecting its suppliers as compared to both western and Saudi groups.

Both the western and the Saudi groups give more emphasis to price and supplier performance as compared to the Japanese group.

In contrast the Saudi group seems to give more emphasis to personal relationship as compared to the other two groups.

It can be concluded that Japanese groups shows different production management practices concerning bases for selecting suppliers as compared to both western and Saudi groups.

Item 10: Suppliers' Involvement in Quality Improvement

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by suppliers' involvement in quality improvement.

Analysis of Results (Tables 71A/71B) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 17.2970, D.F. = 4, P = 0.0001).

The table shows the Japanese group involved their suppliers in quality improvement more than the western and the Saudi group. This was shown by 45.9% for the Japanese group who indicated their management involve suppliers in quality improvement followed by 24.5% for the western group and 13.7% for the Saudi group.

It can be concluded that the Japanese group shows different production management practices concerning involving their suppliers in quality improvement as compared to both western and Saudi groups.

Item 11: Form of Suppliers' Involvement in Quality Improvement

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by form of suppliers' involvement in quality improvement.

Analysis of Results (Tables 72A/72B) (Appendix 1)

Significant differences were shown among the three groups (chi-sq. = 21.3938 D.F. = 2, P = 0.0000).

The table shows the Japanese group involves their suppliers more formally in quality improvement as compared to both the western and the Saudi groups. This was indicated by 88.2% for the Japanese group followed by 27.6% for the Saudi group and 23.1% for the western group.

It can be concluded that the Japanese group shows different production management practices concerning form of suppliers' involvement in quality improvement as compared to both the western and the Saudi groups.

Item 12: Inspection of Incoming Raw Material

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by inspection of incoming raw material.

Analysis OF Results (Tables 73A/73B) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 15.0048, D.F. = 4, P = 0.0031).

The table suggests that the Japanese group seems to rely more on working with their suppliers and using quality staff to inspect incoming raw material as compared to western and Saudi groups. This was indicated by 67.5% for the Japanese group followed by 40% for the Saudi group and 38.3% for the western group.

In contrast both the western and the Saudi groups give more emphasis to their quality staff to inspect incoming raw material as compared to the Japanese group. This was indicated by 58.3% for the Saudi group followed by 55% for the western group and only 15% for the Japanese group.

It can be concluded that the Japanese group shows different production management practices concerning inspection of raw material as compared to both western and Saudi groups.

Item 13: Application of Just In Time (JIT) Technique

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by application of Just In time Technique.

Analysis of Results (Tables 74A/74B) (Appendix 1)

No significant differences were shown among the three groups (chi-sq.= 8.7590 D.F. = 4, P = 0.0674).

Overall, the table shows 57.3% of the total sample in the three groups indicated their management did not apply just in time technique followed by 24.3% who indicated

184

that they had just introduced it and 18.4% who indicated they been using it for a while.

It can be concluded that both Japanese and western groups show no different production management practices concerning application of just in time (JIT) technique as compared to the Saudi group.

Item 14: Consultation with Production Workers

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by consultation with production workers.

Analysis of Results (Tables 75A/75B/75C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 9.2266, p= 0.0099).

Implementing the Mann-Whitney test shows the Japanese group consults their production workers more in designing the production lines as compared to the Saudi and western group. This was indicated by 77.8% for the Japanese group followed by 62.5% for the western group and 56.8% for the Saudi group.

It can be concluded that the Japanese group shows different production management practices concerning consulting their production workers in designing production lines as compared to the Saudi and western groups.

185

Item 15: Responsibility of Production Workers for Correcting Product

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by responsibility of production workers for correcting products.

Analysis of Results (Tables 76A/76B/76C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.11.8618, p=0.0027).

Implementing the Mann-Whitney test shows production workers in Japanese and western groups carry more responsibility for producing product correctly as compared to the Saudi group. This was indicated by 74.4% for the Japanese group followed by 66.4% for the western group and 41.8% for the Saudi group.

It can be concluded that both Japanese and western groups show different production management practices concerning responsibility of production workers for producing product correctly as compared to the Saudi group.

Item 16: Authority of Production Workers in Stopping Production Lines

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management in his factory as indicated by authority of production workers in stopping production lines.

Analysis of Results (Tables 77A/77B) (Appendix 1)

186

No significant differences were shown among the three groups (chi-sq.= 1.5211 P = 0.4674).

The table shows 68.2% of the total sample in the three groups indicated their production workers have the authority to stop production lines at some levels,while 24% indicated they have the authority to stop them at all levels and only 7.8% who indicated that they have no authority at all.

It can be concluded that both Japanese and western groups show no different production management practices concerning authority of production workers in stopping production lines as compared to the Saudi group.

Item 17: Performance of Daily Checks by Machine Operators

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by performance of daily checks by machine operators.

Analysis of Results (Tables 78A/78B/78C) (Appendix 1)

Significant differences were shown among the three groups (chi-sq.= 26.0600, p= 0.0000).

Implementing the Mann-Whitney test shows the Japanese group seems to give more emphasis to performance of daily checks by machine operators as compared to the

other two groups. This was indicated by 80% for the Japanese group followed by 35% for the western group and 30% for the Saudi group.

It can be concluded that the Japanese group shows different production management practices concerning performance of daily checks by machine operators as compared to both western and Saudi groups.

Item 18: Action Taken to Correct Problem in the Production Lines

Each respondent from the three groups of factory ownership was requested to specify his opinion regarding the production management practices in his factory as indicated by action taken to correct problem in the production lines

Analysis of Results (Tables 79A/ 79B) (Appendix 1)

Significant differences were shown among the three groups.

The table shows the Japanese group seems to give more emphasis to the workers' group for correcting problems in the production lines as compared to the other two groups. This was indicated by 85% for the Japanese group followed by 35% for the Saudi group and 25% for the western group.

In contrast both western and Saudi groups seems to give more emphasis to the maintenance departments to correct problems in the production lines as compared to the Japanese group. This was indicated by 91.7% for the Saudi group followed by 71.7% for the western group and 42.5% for the Japanese group.

It can be concluded that the Japanese group shows different production management practices concerning action taken to correct problems in the production line as compared to the other two groups.

5.3 General Summary

5.3.1 General Background Information

(1) Both Japanese and western groups seem to maintain similar background information concerning the proporation of their management levels involved in this research as compared to Saudi group. (Tables 1A/1B) (Appendix 1)

(2) Both Japanese and western groups seem to maintain similar background information concerning the length of time managers' employment in the factories as compared to Saudi group. (Tables 2A/2B) (Appendix 1)

(3) Both Japanese and western groups seem to maintain similar background information concerning the age of their factories as compared to Saudi group. (Tables 3A/3B) (Appendix 1)

(4) Both Japanese and western groups seem to maintain different background information concerning their total numbers of employees as compared to Saudi group. (Tables 4A/4B/4C) (Appendix 1)

(5) Both Japanese and western groups seem to maintain similar background information concerning the percentage of Saudi and non-Saudi employees working in their factories as compared to Saudi group. (Table 5) (Appendix 1)

The analysis of section one of the questionnaire (general background information) suggests that both Japanese and western groups maintain similar background information as compared to Saudi group on items 1, 2, 3 and 5. Both of them show different background information only on item 4 as compared to Saudi group.

5.3.2 Manangement philosophy

(1) Both Japanese and western groups seem to maintain similar management philosophy concerning manufacturing objectives as compared to Saudi group. The three groups considered customers satisfaction their main objectives. (Tables 6A/6B) (Appendix 1)

(2) Both Japanese and Saudi groups seem to employ more younger employees than western group. (Tables 7A/7B/7C) (Appendix 1)

(3) Japanese group seems to give more emphasis to the characteristics of age, attitude and ability to cooperate with others in selecting their employees as compared to both western and Saudi groups. While both western and Saudi groups seem to give more emphasis to the characteristic of knowledge in selecting their employees as compared to Japanese group. In contrast, Saudi group seems to give more emphasis to the degree of certification in selecting their employees as compared to both Japanese and western groups. Finally the western group seems to give more emphasis to the

190

characteristic of skills in selecting their employees as compared to the other two groups. (Tables 8A/8B) (Appendix 1)

(4) Employees' attitude to improve product quality seems to be better in Japanese group as compared to western and Saudi groups. (Tables 9A/9B) (Appendix 1)

(5) Both western and Saudi groups give more emphasis to capital approach to improve product quality as compared to Japanese group. While the Japanese group seems to give more emphasis to the labour approach compared to both the western and Saudi groups. (Tables 10A/10B/10C) (Appendix 1)

(6) The Japanese group treats their managers better than both western and Saudi groups. (Tables 11A/11B) (Appendix 1)

(7) The Japanese group treats their workforce better than both western and Saudi groups. (Tables 12A/12B/12C) (Appendix 1)

(8) The Japanese group maintains a better relationship between labour and management as compared to both western and Saudi groups. (Tables 13A/13B/13C) (Appendix 1).

(9) The Japanese group involves their customers in determining product quality more than western and Saudi groups. (Tables 14A/14B/14C) (Appendix 1)

(10) Suppliers in Japanese group seem to make a better contribution to product quality improvement as compared to both western and Saudi groups. (Tables 15A/15B/15C) (Appendix 1)

191

(11) Both Japanese and western groups seem to maintain similar management philosophy concerning competition criteria as compared to Saudi group. The three groups give priority to quality in competition. (Tables 16A/16B) (Appendix 1)

(12) Both Japanese and western groups maintain similar management philosophy concerning the extent to which quality has contributed to the success of their factories as compared to Saudi group. (Tables 17A/17B/17C) (Appendix 1)

(13) The Japanese group invests more than both western and Saudi groups in improving product quality. (Tables 18A/18B/18C) (Appendix 1)

(14) Both Japanese and western groups invest more than Saudi group in technology. However, the Japanese group seems to invest more than both western and Saudi groups in employees training, marketing and suppliers development. (Tables 19A/19B) (Appendix 1)

(15) The three groups show different management philosophy among each others concerning determining the important factors contribute to improve product quality. (Tables 20A/20B) (Appendix 1)

(16) Both Japanese and western groups seem to consider the government attitude is less helpful to improve product quality as compared to Saudi group. (Tables 21A/21B/21C) (Appendix 1)

The analysis of Section Two of the questionnaire (Management Philosophy) suggests the following:

Both Japanese and western groups seem to maintain similar management philosophy as compared to Saudi group on items 1, 11 and 12.

The three groups maintain different management philosophy among each others only on item 15.

The Japanese group seems to maintain different management philosophy as compared to both western and Saudi groups on items 3, 4, 5, 6, 7, 8, 9, 10 and 13.

The western group seems to maintain different management philosphy as compared to both Japanese and Saudi groups only on item 2.

5.3.3 Management practices

(1) Both Japanese and western groups seem to maintain similar management practices concerning the length of plans for improving product quality (short term and medium term) as compared to Saudi group. (Tables 22A/22B) Appendix 1)

(2) Top management in both Japanese and western groups is more involved in planning for product quality improvement as compared to Saudi group. (Tables 23A/23B/23C) (Appendix 1)

(3) Both Japanese and Saudi groups rely more on internal measures to improve product quality as compared to western group (internal seminars for managers and internal training for employees). The western group rely more on external measures

to improve product quality as compared to the Japanese and Saudi groups. (Seminars for managers presented by professional people and training employees abroad). (Tables 24A/24B) (Appendix 1)

(4) Top management in Japanese group is more committed to product quality improvement as compared to western and Saudi groups. (Tables 25A/25B/25C) (Appendix 1)

(5) Both Japanese and western groups seem to maintain similar management practices concerning employees understanding of quality objectives as compared to the Saudi group. (Tables 26A/26B) (Appendix 1)

(6) Both Japanese and western groups seem to maintain similar management practices concerning the method of establishing quality objectives as compared to Saudi group (by consulting employees). However, the Japanese group seems to consult their employees more than western and Saudi groups. (Tables 27A/27B) (Appendix 1)

(7) Both Japanese and Saudi groups seem to give more emphasis to the sources of discussion with employees and unwritten policy emphasized by top management for establishing their objectives as compared to western group. The western group seems to give more emphasis to a written source of policy. (Tables 28A/28B) (Appendix 1)

(8) The Japanese group seems to consult their employees in decision-making more than both western and Saudi groups. (Tables 29A/29B) (Appendix 1)

(9) Both Japanese and western groups seem to involve their departments in decision making concerning quality more than Saudi group.   (Tables 30A/30B/30C) (Appendix 1)

(10) Both Japanese and Saudi groups spent more time in decision-making procedure as compared to western group. (Tables 31A/31B/31C) (Appendix 1)

(11) The Japanese group spent less time in implementing their decisions as compared to western and Saudi groups. (Tables 32A/32B/32C) (Appendix 1)

(12) Both Japanese and western groups seem to maintain similar management practices concerning the structure of their factories as compared to Saudi group. The three groups indicated they applay formal structure in their factories.   (Tables 33A/33B)(Appendix 1)

(13) The western group seems to maintain more departments in their factories as compared to Japanese and Saudi groups. (Tables 34A/34B) (Appendix 1)

(14) Interaction between departments is more cooperative in Japanese and Saudi groups as compared to western group. (Tables 35A/35B) (Appendix 1)

(15) Both Japanese and western groups seem to maintain similar management practices concerning occurrence of discussion of objectives as compared to the Saudi group. (Tables 36A/36B) (Appendix 1)

(16) Both Japanese and western groups seem to maintain similar management practices concerning discussion of objectives with other employees from different departments as compared to the Saudi group. (Tables 37A/37B) (Appendix 1)

(17) Both Japanese and Saudi groups seem to maintain different management practices concerning reasons for discussing objectives with their employees as compared to the western group. (Tables 38A/38B) (Appendix 1)

(18) Both Japanese and western groups seem to maintain similar management practices concerning reasons for not discussing objectives with other employees as compared to the Saudi group. (Tables 39A/39B) (Appendix 1)

(19) Both Japanese and western groups seem to maintain similar management practices concerning introducing modification to their original plans as compared to the Saudi group. (Tables 40A/40B) (Appendix 1)

(20) The three groups maintain different management practices from each other concerning implementing of modifications to their original plans. (Tables 41A/41B) (Appendix 1)

(21) Managers in the Japanese group show less resistance towards modification to original plan as compared to both western and Saudi groups. (Tables 42A/42B/42C) (Appendix 1)

(22) The workforce in the Japanese group show less resistance towards modification to original plan as compared to both western and Saudi groups. (Tables 43A/43B/43C) (Appendix 1)

(23) Both Japanese and western groups maintain similair management practices concerning understanding of authority and responsibility terms as individual as compared to the Saudi group. (Tables 44A/44B) (Appendix 1)

(24) The Japanese group gives more emphasis to the terms of understanding authority and responsibility as group as compared to both western and Saudi groups. (Tables 45A/45B/45C) (Appendix 1)

(25) The Japanese group delegates more authority and responsibility to improve product quality as compared to both western and Saudi groups. (Tables 46A/46B/46C) (Appendix 1)

(26) Both western and Saudi groups maintain different management practices concerning reasons for not delegating authority and responsibility as compared to Japanese group. (Tables 47A/47B/) (Appendix 1)

(27) Both Japanese and western groups seem to maintain similair management practices concerning form of communications as compared to Saudi group. The majority of each group indicated they rely on formal communication in their contacts. (Tables 48A/48B) (Appendix 1)

(28) Both Japanese and Saudi groups give more emphasis to the means of regular meeting and telephone calls as compared to western group. The western group gives more emphasis to the means of mail and discussion in the coffee room as compared to both Japanese and Saudi groups. (Tables 49A/49B) (Appendix 1)

(29) The Saudi group seems to consider contact during work time more daily routine as compared to both Japanese and western groups. Both Japanese and western groups consider it as method to coordinate between employees, however the Japanese group considered it further as a method to emphasize the teamwork between employees. (Table 50A/50B) (Appendix 1)

(30) The Japanese group seems to give more emphasis to the group motivation approach as compared to both western and Saudi groups. Both western and Saudi groups give more emphasis to the individual approach. (Tables 51A/51B) (Appendix 1)

(31) Both Japanese and western groups maintain different management practices concerning motivating their employees as compared to the Saudi group. (Tables 52A/52B/52C) (Appendix 1)

(32) The Japanese group seems to invest more in developing their employees as compared to both western and Saudi groups. (Tables 53A/53B) (Appendix 1)

(33) Both western and Saudi groups give more emphasis to the specific training for new employees while Japanese group gives more emphasis to the general training. (Tables 54A/54B) (Appendix 1)

(34) Both Japanese and western groups seem to maintain similar management practices concerning time spent training new employees as compared to Saudi group. (Tables 55A/55B/55C) (Appendix 1)

(35) Both Japanese and western groups seem to maintain similar management practices concerning maintaining product standard as compared to the Saudi group. (Table 56) (Appendix 1)

(36) Both Japanese and western groups seem to maintain similar management practices concerning the level of product standard. (Tables 57A/57B) (Appendix 1)

(37) Both Japanese and western groups seem to apply more statistical quality control as compared to the Saudi group. (Tables 58A/58B/58C) (Appendix 1)

(38) Both Japanese and western groups maintain less number of inspectors as compared to the Saudi group. (Tables 59A/59B/59C) (Appendix 1)

(39) Both western and Saudi groups seem to give more emphasis to external professional inspectors to inspect their products. The Japanese group seems to give more emphasis to employees' self-inspection of their products. (Tables 60A/60B/60C) (Appendix 1)

(40) Both Japanese and western groups maintain similar management practices concerning action taken to improve product quality as compared to the Saudi group. Tables 61A/61B) (Appendix 1)

The analysis of section three of the questionnaire (management practices) suggests the following:-

The three groups maintain similar management practices on items 1, 2, 12, 15, 16, 18, 19, 23, 27, 34, 35, 36 and 40.

The three groups maintain different management practices from each other only on item 20.

Both Japanese and western groups seem to maintain different management practices as compared to Saudi group on items 5, 9, 29, 31, 37 and 38.

The Japanese group seems to maintain different management practices as compared to western and Saudi groups on items 7, 8, 11, 21, 22, 24, 25, 26, 30, 32, 33 and 39.

The western group seems to maintain different management practices as compared to both Japanese and Saudi groups on items 3, 4, 6, 10, 13, 14, 17 and 28.

5.3.4 Production Management

(1) Both Japanese and western groups seem to maintain similar production management practice concerning location of product design as compared to Saudi group. (Tables 62A/62B) (Appendix 1)

(2) Both Japanese and western groups seem to maintain similar production management practice concerning time spent in product design cycle as compared to the Saudi group. (Tables 63A/63B) (Appendix 1)

(3) Both Japanese and western groups seem to maintain similar production management practice concerning times of running product tests as compared to the Saudi group. (Tables 64A/64B) (Appendix 1)

(4) Both Japanese and western groups seem to maintain similar production management practice concerning reasons for not maintaining regular product tests as compared to the Saudi group. (Tables 65A/65B) (Appendix 1)

(5) Both western and Saudi groups rely on US/UK supplies for buying their raw materials which are not available in Saudi Arabia. The Japanese group seems to rely on Japanese suppliers. (Tables 66A/66B) (Appendix 1)

(6) Both Japanese and western groups seem to consider labour cost as slightly higher than the Saudi group. The Saudi group seems to consider their manufacturing overhead cost is higher than Japanese and western groups. (Tables 67A/67B) (Appendix 1)

(7) The Japanese group seems to deal with less number of suppliers as compared to both western and Saudi groups. (Tables 68A/68B/68C) (Appendix 1)

(8) The Japanese group seems to stay longer with their suppliers as compared to both western and Saudi groups. (Tables 69A/69B/69C) (Appendix 1)

(9) The Japanese group seems to give more emphasis to supplier quality performance and mutual trust in selecting their suppliers. While western group seems to give more emphasis to price and suppliers performance together. In contrast, Saudi group seems

to give more emphasis to the price, suppliers performance and the personal relationships. (Tables 70A/70B) (Appendix 1)

(10) The Japanese group seems to involve their suppliers in quality performance more than both western and Saudi groups. (Tables 71A/71B) (Appendix 1)

(11) The Japanese group seems to involve their suppliers more formally in quality improvement as compared to both western and Saudi groups. (Tables 72A/72B) (Appendix 1)

(12) The Japanese group seems to rely on working with their suppliers and using quality staff to inspect incoming raw material. Both western and Saudi groups rely on quality assurance staff. (Tables 73A/73B) (Appendix 1)

(13) Both Japanese and western groups seem to maintain similar production management practice concerning, not applying just in time (JIT) technique as compared to Saudi group. (Tables 74A/74B) (Appendix 1)

(14) The Japanese group seems to maintain different production management practice concerning consulting their production workers in designing production lines as compared to the western and Saudi groups. (Tables 75A/75B/75C) (Appendix 1)

(15) Production workers in Japanese and western groups have more responsibility for producing product correctly as compared to Saudi groups. (Tables 76A/76B/76C) (Appendix 1)

(16) Both Japanese and western groups seem to maintain similair production management practice concerning authority of production workers in stopping production lines as compared to Saudi groups. (Tables 77A/77B) (Appendix 1)

(17) The Japanese group seems to perform daily checks by machine operators more than western and Saudi groups. (Tables 78A/78B/78C) (Appendix 1)

(18) The Japanese group seems to give more emphasis to their workers' groups to correct problems in the production lines. Both western and Saudi groups rely on maintanance department to correct such problems. (Tables 79A/79B) (Appendix 1)

The analysis of section four of the questionnaire (production management practices) suggests the following:-

All three groups maintain similar management practices on items 1, 2, 3, 4, 13, and 16.

The three groups maintain different production management practices only on item 9.

Both Japanese and western groups seem to maintain different production management practices as compared to the Saudi group on item 6.

The Japanese group seems to maintain different production managment practices as compared to both the western and the Saudi groups on items 5, 7, 8, 10, 11, 12, 14, 17 and 18.

The next chapter discusses in greater detail the results obtained through the analysis

of the questionnaire responses. It also discusses the results of this research in relation

to previous studies

CHAPTER SIX

Discussion and Evaluation of Findings

6.1 Introduction

This section contains a discussion of the findings of the previous chapter (Chapter Five) in relation to the management philosophy, management practices and production management which are used by the three groups. There is also an evaluation of these findings in relation to the literature which is available on this subject.

6.2 Management Philosophy

The analysis of this section of the questionnaire in Chapter Five suggests that the three groups maintain a similar management philosophy in defining their main objectives. Customer satisfaction and the availability of resources are thought to be the main objectives of all groups in conducting their business. Concern for high profits seems to be favoured slightly more by the western and Saudi companies than the japanese, who are more concerned about customer satisfaction.

It appears that the Japanese and Saudi groups prefer to employ younger people compared to the western companies, as 50% of the employees of the Saudi group, and 47.5% of the japanese group were aged under thirty. Interviews conducted by the researcher later showed that the reason for this because such employees demand less salary and it is more practical for the organisation to spend time and money

developing them for the future; western companies gave more emphasis to recruiting people who already have greater experience within the industry, which enables them to compete competitively. Further to this, many employees were on short term contracts, which discourages the management from investing in developing their employees, since many of them leave the company and country after their contracts expire.

The Japanese companies seem to give more emphasis to the characteristics of age, attitude and the ability to cooperate with others in selecting their employees. This reflects the Japanese philosophy of emphasising the importance of the human approach in determining the product quality and the organisational structure through working together as a group. The western group regarded the level of skills as the key in selecting their employees.

Through the later interviews with western managers this was explained in terms of having skilful employees with some experience leading to a reduction in the costs and providing high quality products, which enable the companies to compete effectively in the international market. In contrast the Saudi group give more emphasis to the level of education, where they considered qualifications the most important characteristic in selecting their employees. This may reflect the comparatively higher perceived standards of education in Japan and the west; therefore, the level of certification is an easy and obvious measure in selecting employees, whereas the other groups look for other main characteristics.

An important point regarding the characteristics of selecting employees is both the western and Saudi groups emphasise the importance of the employee's background knowledge: for example, in the interviews it became clear that both groups

considered the ability to speak a foreign language as quite important in selecting their employees. In contrast, the Japanese companies believed that the employee's attitude can have a significant role to play in improving the product quality and they believe this could be encouraged by creating a suitable atmosphere which could lead to open contact between employees through working together. The western group also emphasise the importance of employee attitudes in motivating their employees, based on satisfying each individual's needs.

Western and Saudi companies believe more in the use of technology, since they invest more in obtaining high technology to improve their product quality; this is reflected in Table 10 (see Appendix 1), where these groups of companies were seen as capital intensive whereas the Japanese were seen as concentrating more on labour.

In Table 19 the Japanese are shown to invest reasonably in technology and rely more heavily than the other groups on developing their human resource; this may explain why the Japanese group treat their managers and their workforce more as a family (they achieved higher results in the answers to questions on treating management and workforce as a family than the other groups and on the quality of the relationship between management and the workforce) than their western and Saudi counterparts.

The Japanese group appear to make greater efforts to improve the product quality. This is achieved through their internal environment (for example, all employees working for the organisation are involved in two way communication), which explains why careful attention is paid in recruitment to the attitude of employees, the number of applicants interviewed for particular positions, and why it takes the japanese long periods to interview applicants to select a few for particular jobs.

Product quality improvements are also achieved by involving external customers by using a variety of methods, such as investing more in market research, working with their suppliers, and significantly more attention to the final customer, such as getting feedback from them through box suggestions or after-sales service departments, and other approaches.

Although competition could be dealt with by adopting a variety of approaches, such as advertising, price, quality, and distribution, it was found that all three groups highlight quality and price approaches far more than any other. Japanese workers emphasised quality slightly more than the western and Saudi companies, but this is not seen as statistically significant. All three groups believe that the quality of the product has been an important factor in the success of their organisation.

The management in Japanese and western companies seem to invest more in improving their product quality than the management in the Saudi companies. There were noticeable differences in how the companies spent their investment in improving their products: the western group seem to invest heavily in technology, whereas the Japanese group invest in technology and more heavily in training, market research and supplier development.

In relation to the most important element contributing to the improvement in product quality, both western and Saudi groups give more emphasis to the role of the manager. The interviews reflected this, and also showed that the western managers had more belief in the responsibility of their workforce than their saudi equivalents, and that they require a clear vision of the organisation's objectives, how to inform the workforce of these objectives, and how to motivate their employees to support these objectives.

The Japanese managers gave more emphasis to the role of the customers and market research, which they considered the most important source for establishing the product design and providing all information needed for production.

The western group consider technology as the most important factor in producing high quality output, and the Japanese and western groups considered the workforce as a more important factor in this respect than the Saudi group. On the other hand, both groups expressed less satisfaction with the effect of the government attitude on product quality than the Saudi group did.

Further discussion of this question in the interviews showed that although the government provided significant financial support to organisations to improve the quality of their products, they feel that there is no integrating system to link the organisations and factories together to share ideas and initiatives about improving their product quality. They also suggested that the system appears bureaucratic, and that it takes considerable time to work through the system; although there is clear financial support for the companies, there is a need for some method of linking the companies to the government and to one another to improve their working practices, efficiency and relations.

6.3 Management Practices

There is little real difference between the three groups in terms of their management's planning period for improving the product quality (table 22). A total of 75% of all respondents referred to their management using short (1 - 3 years) or medium (3 - 5 years) term planning, indicating a tendency among all the companies to plan in this

period, rather than a longer term plan. This is likely to reflect the difficulties of long term planning due to the nature of the Saudi environment.

In the interviews carried out in the later stages of the research, senior managers indicated that there were problems in implementing official plans in a time period of more than five years, due to the fast changes that take place in the local environment, and so it is preferable to plan in only the short or medium term

There are few differences between the groups in their understanding of the quality objectives; the Japanese group do score slightly higher than the Saudi and Western groups.

Although all three groups emphasised that their employees understand the main objectives of their product quality programme, but there seem to be differences in the level of employees who understand these objectives. The Saudi group only appear to consult their top managers in establishing the quality objectives; the western companies consult managers from different departments, while the Japanese seem to involve all their employees, as they have a full process of consultation with their employees.

The Saudi and Japanese groups seem to use similar sources of information in their establishing of their objectives in this area, as both groups emphasise discussion with their employees and unwritten policies emphasised by the top management. In contrast, the western group emphasised a use of written policy as the main source of their information in this process.

Top management seem to be involved in planning for product quality in the Japanese and western group than in the Saudi group. This may reflect the relative levels of education in the two groups, as most Japanese and western managers have received a greater general education than their Saudi equivalents. Saudi managers rely on their own long experience in the industry to support the middle level managers who will have received a better education either within the Kingdom of Saudi Arabia, or in western countries.

Both Saudi and Japanese groups measure product quality in a similar fashion, as they emphasise the importance of internal seminars and training for employees, whereas western companies seem to use seminars by professionals and training employees abroad.

At a later stage, interviews showed that those within the western group felt that there was a problem in getting qualified staff who could lecture in these fields within Saudi Arabia, and so they have to bring in staff from outside. They also prefer to train their Saudi employees abroad, so that they are familiar with western culture and are able to improve their ability in english, which they considered to be very important to the success of their organisations.

The Japanese seem to prefer to bring Japanese managers to Saudi Arabia to train their local employees, because they feel that there is an advantage in training their employees in their home country for both the employees and their managers: the employees prefer to be trained within their own country, due to social reasons (such as that they cannot leave their families), and the Japanese managers benefit because they achieve a greater understanding of the Saudi environment and their employees,

which means that they can establish better training programmes, which will suit their needs and will work more effectively as a result.

The Japanese are more dedicated to the quality of their products, as can be seen in table 28, and both the Saudi and western groups seem to be less so. In addition to the reasons dicsussed above, this may be explained by the fact that the Saudi employees seem to be more affected by their personal relationship with their superiors, as they show a greater attachment to the person in a particular position rather than to that person's role within an organisation. This reflects the importance of close personal contact for Saudi managers, to a far greater extent than for the other groups. For this reason, changes in organisation tend to be more disruptive for Saudi employees, as this means a change in the level of professional contact with those with whom they have a personal relationship.

The western group shows a similar attitude, but for different reasons: many western employees are on short term contracts and for this reason have less loyalty to their organisations (employers) than to those with whom they have immediate personal contact. It seems that both the western and Saudi groups both seem to have less loyalty for their organisations, but for different reasons.

In terms of their decision making, all three groups prefer a system of consulting with their subordinates and colleagues, but this seems to be more emphasised by the Japanese group. This is expected, as noted previously, because the process of consultation is a vital part of the distinctive management style of Japanese organisations. Employees of western companies tend to involve the manager of the relevant department rather than members of a different department.

Saudis refer their decisions to the top management of their company rather than other members of their department or colleagues; this is also reflected by the fact that the Saudi group do not consult other departments within their organisation as much as the employees of both western and Japanese companies. There are two reasons for this behaviour of the Saudis: firstly, the Saudi organisations rely on a system of personal contacts rather in addition to a formal structure of control, meaning that the Saudis think in terms of their relationship to a particular individual rather than their particular role within an organisation; and secondly, one of the teachings of Islam is that there should be a process of consultation within a group before a decision is taken.

There are two patterns in the time that is taken to make and carry out decisions concerning product quality: the western companies tend to consult the managers in their decision seeking process, whereas the Japanese and Saudis will seek a consensus across the entire workforce. The result of this is that in the western companies, the decisions are made in a shorter time period than in the Japanese and Saudi companies, but in the Japanese companies, the decisions take less time to actually be introduced to the companies' working practices, whereas in the Saudi companies both the decisions and the carrying out of those decisions takes longer. The result of this is that there is less likely to be a quick decision where one may be needed, but there is a quicker change in the long term working practices in the Japanese company than is the case in the other companies, where there is greater resistance to decisions made outside a particular department.

One of the findings from Table 33 is that all three groups of companies rely on more formal channels of communication,. It was discovered through interviews, though, that in the Saudi companies there does exist a formal structure to the organisation, but

213

in addition to this there is a parallel network of friendships, influence and contacts which also work as a channel of communication.

Western companies tend to be divided into more departments than either the Japanese or Saudi companies: this is because the western companies are divided into functional groups with specific roles within the organisation. The Japanese and Saudi companies tend to look at the organisation as a whole rather than thinking in terms of the specific duty within the company. Again this may reflect the influence of the networkof friendships in the Saudi group and the importance of teamwork principles in the Japanese group.

As a result of this difference in the structures of the different groups of companies, employees in the western companies referred to there being less co-operation between different departments, while the employees of both the Japanese and Saudi companies indicated that there was a greater level of inter-departmental harmony. The cause of the greater lack of co-operation in the western companies is this organisational nature of the companies, as each manager runs a separate department with little contact with other departments which may have related responsibilities, yet are run almost in competition with one another. In contrast, the atmosphere of the Saudi companies is based on the personal relationships between the individual managers and the additional informal channels of communication that exist within the organisation; the Japanese view the company as a complete organisation, with each employee having an interest in the effective functioning of the company as a whole, rather than being focused on their particular department.

This is also reflected in Table 38, where the employees of the western companies were found to be far more concerned about their particular department than the

214

company as a whole. The Japanese and Saudi companies got similar results in their answers to these questions, but for different reasons: the Saudi employees engage in the discussion of the companies objectives as a process of gaining background information about company activities in case they are asked by colleagues or the top management to complete a different task, whereas for the Japanese companies it represents part of the decision making process.

Although the employees of all three groups of companies indicated that there was a discussion of the company objectives (Table 36), there is a major difference in the role of such discussions for all three groups: for the Japanese, the discussion of the company objectives plays a major part in decision making; for the western companies, the decision tend to be taken at a very much lower level than is the case in the Saudi group; usually the head of the relevant department makes the decision, and there is a need to get a consensus of opinion within the department, but this does not represent the actual decision making, but a process of information gathering.

In the Saudi companies, all such decisions are referred to the top level of management, so there is little need for any discussion of the objectives, and this is reflected in table 36, where the employees of the Saudi companies indicated slightly less involvement in discussion (11.7% said No). This may reflect that the discussion is a seeking of better informed opinion by the Saudi top management who have to take responsibility for all such decisions. It is important to distinguish between discussion and decision making in this case.

All three groups of employees indicated that changes had been made to the original plans of the companies. This can be connected to the answers to questions about the length of planning used by the companies; there are rapid changes in the external

215

environment, and so there can be little long term planning; sudden changes in the environment lead to modifications in the basic company plan. All the planning that does take place takes the form of a guide to company behaviour and is not seen in absolute terms, having to be followed at all costs; this would be a dangerous policy when the external environment within the kingdom of Saudi Arabia cannot be controlled directly by the companies.

The differences in company structure can be seen in the way in which the different companies carry out the modifications to their basic plan: the Saudi companies rely on their top mangers to carry out such amendments, whereas the western companies give such responsibility to the department manager who is affected by the changes in question. In the Japanese companies, all employees are involved. As a result of this, there is a greater level of acceptance of the changes in the Japanese companies by both the managers and the workforce than in either the Saudi or western groups, as a result of the changes being imposed from outside the relevant department - in the case of the Saudi group, it is imposed by the top managers and passed down within the company as they impose their decision; in the western group, the reluctance to accept such changes results from the decisions of one department affecting different parallel departments, which leads to a conflict of interest between the different departments who may have overlapping concerns. This results from the western companies' employees being so focused on their own departments and interests.

The greater resistance of the employees of the Saudi and western groups reflects the managers' and the workers' treatment in these companies, as was shown in their responses in Tables 6 and 7, where they were asked about being treated as a family. The Japanese treat their managers in a more hospitable fashion than their counterparts in the other companies, which leads to far less resistance from their managers and

workforce and involve them in the decision making process and the introduction of the modifications to the workplace.

The shopfloor employees of the Japanese companies show marginally more understanding of their authority and responsibility than the other two groups, possibly because this is a characteristic of the Japanese managers - they show a greater reliance on teamwork and a willingness to work with one another than is the case in the other groups. There is a greater tendency to delegate authority among the Japanese companies. Later interviews showed that the Japanese delegated authority to a greater extent and to a lower level than was the case in the Saudi and western groups, as they place the decision making authority on the shop floor.

In the western group, such authority was given to the middle managers, who had to be asked by the shop floor for decisions to be made, while in the Saudi companies, the authority was barely delegated at all, as both the shop floor and the middle managers had to seek authority from senior managers for decisions. The reasons for this lack of delegation by the latter two groups was that in the western companies the managers were unwilling to relinquish control over such decisions, while in the Saudi companies there was a lack of confidence in the employees.

In the later interviews, some younger Saudi managers held different viewas to the older managers to some extent, as they prefer to delegate their authority to a lower level.

All three groups of companies use formal means of communications within their organisation; however, the Saudis tend to use such communications as a general guide, and also use personal contact in addition to this, whereas for both the Japanese

and western companies, formal communications are used for policy decisions and they do not rely on any other forms of communication.

In the interviews the Saudis indicated that they use formal channels of communication for general guidance and the overall company policy, but rely more on personal contacts for day to day problem solving, reports and updates. In the other companies, all policy communication was handled through the formal channels, and this was represents an absolute guide to company policy for the employees, which has to be followed literally. Saudi communications seem to have more linear content, whereas the other companies seem more structural.

The actual means used varied among the different groups of companies. The western group relied on their mail service to a greater extent than the other companies, and also on discussions in the coffee room. This is a case of relying on comparatively formal means of communication, as the mail system relies on the company structure for the dispersal of information with no direct personal contact, and the discussions in the coffee room refers to the regular one hour break in the middle of the day, which enables regular meetings to take place.

Companies in the Japanese and Saudi group use regular meetings more than the western companies: in the case of the Japanese group, this means daily meetings, which is a very formal method. In the Saudi group, the meetings referred to are not regular in the sense of occuring according to a fixed pattern and having a specific timetable for the meetings, so much as frequent informal meetings. The Saudis gave a stronger response to the category of phone calls, which again reflects the importance of direct communication and the importance of contacts and relationships between the employees.

In their answers to the question of the reasons for contact during work time, all three groups showed similar results in the categories of social reasons, emphasising objectives and response to problems. They diverge in their responses in the categories of co-ordinating employees (where the western and Japanese gave a stronger response than the Saudi companies), and in emphasising teamwork, where the Japanese scored far more than the other two; this reflects the importance of the concept of teamwork for Japanese management.

The Saudi scored far more in their response to the category of daily routine. This refers to the practice of almost daily telephone calls to their contacts and friends, which consist of a mixture of personal conversation and business talk; it is important to keep in contact every day to confirm progress and check on any problems that may occur. This again shows the importance for Saudi employees of their personal relationships.

The western and Saudi companies rely on a system of individual motivation whereas the Japanese use a system of group approach to work. The Japanese response reflects the Japanese attitude to management, which relies on this sort of teamwork and group responsibility.

For the western companies, their reliance on individual motivation reflects the Anglo-American culture of individual incentives and competitive individualism; employees are more motivated when they feel that they are individually recognised for their achievement, more than if their entire department is rewarded, and the management system reflects this type of thinking.

For the Saudis their reliance on individual motivation is a result of Islamic teaching, which states that everyone should be rewarded for his work, hence there is a greater sense of individual responsibility. This does not come into conflict with the sense of group responsibility which also exists, as this operates in a very general sense, and the individual has to take responsibility for his actions in particular. There should be no conflict between these senses of responsibility, as the group interest has priority in general, but Islam does emphasise that there should be an individual sense of accountability.

This difference in the type of motivation in the different companies is reflected in the motivators that are used: for the Saudis, the most important motivators are special recognition (referring to status and responsibility), quick promotion (as they seek greater responsibility), and the delegation of authority. This reflects the importance of status to the Saudi employees, and that it is important that they are able to show their capabilities. They are not as concerned about material rewards, but are more interested in showing their level of responsibility and a rapid upward movement in terms of their position within the company or industry.

The short term contracts of the employees of the western companies result in their principal motivation being their material reward. They wish to receive the greatest financial reward that they can achieve in the time that they will be working within the Kingdom of Saudi Arabia. The Japanese seem to be more concerned about the level of teamwork that exists, and try to encourage their employees to get involved in the companies' activities.

Employees in none of the groups consider training, compensation or social service to be sufficient incentives; this reflects the difficulty in obtaining skilled employees in

Saudi Arabia, and because the Saudi law requires companies to pay compensation to their employees; the firms are located outside the cities, hence all companies must provide social services such as schools, supermarkets and sports facilities for their employees. For this reason the companies have little choice about using these factors as incentives.

It is important to note that the Japanese do not seem to be interested in lifetime employment, as might be expected as this is one of the characteristics of Japanese management. This reflects the difficulty facing the management in long term planning in the Saudi environment, as this means that it is difficult to make guarantees of this sort.

Despite none of the companies expressing a strong use of training as a motivator, Table 53 shows that the Japanese invest more in training than their counterparts. This reflects the responses earlier where they referred to themselves as being more labour intensive than the other groups, who were seen as capital intensive. The Japanese have a policy of developing their human resource as much as possible, and this reflects the importance of the human element of their organisation in their thinking. As a result of this greater interest in training they offer a more general training to their employees than the other companies.

The Saudi and western companies give more specific training in particular areas. This reflects the need to avoid wasting time for the western companies, where most of the employees are on short term contracts. Time spent training the employee means time that the employee is not working properly.

There are problems for the Saudi companies where many of their employees are not under contract, and are liable to join a different company once they have been trained, which would mean that both time and money would be wasted if they left the company once they had been trained. This is especially true given the importance of rapid promotion and status for Saudi employees. This shows the difficulty for the business community in Saudi Arabia in controlling the labour force, and also represents a possible long term problem for the saudi economy.

All of the companies spend a similar amount of time in training new employees. This shows that they do similar amounts and types of basic training.

Similarly all three groups gave a 100% response to maintaining product quality. This is because, as the major product of the Saudi economy, oil has to be produced to a very high standard, and as the world's largest exporter the Saudi industry has to operate to the international standard.

In maintaining quality control the different companies use different systems. The Japanese and western companies rely more heavily on a statistical system of quality control than the Saudis, because of the higher level of education of their employees, and the greater level of responsibility that they are willing to delegate.

In the Saudi companies, a statistical technique would be used by the middle management, who tend to have been educated in the west or in the Kingdom of Saudi Arabia, rather than the top management. As a result, the Saudis use more quality control inspectors than the other companies. This represents a more direct system of quality management.

The Japanese use a system of allowing the employees to check the product quality, because they have more confidence in their employees than the other companies. Each employee has a responsibility for checking product quality built into his job description, and this also reflects the greater level of training for employees in these companies, as was noted above.

The western and Saudi companies rely on professionals to carry out this function. There is no difference among the three groups in the use of internal staff for this responsibility, but the western and Saudi companies rely more on external staff to check their product quality, (despite the Saudis using more quality inspectors than the other two groups of companies) while the Japanese rely more on their own shop floor employees to do this.

All three companies have similar results in their answers to the amount of time taken to improve product quality, as this is a very sensitive area. There is a general need for quick responses, and an emphasis on avoiding problems in this area.

6.4 Production Management

All three groups maintain their main product design outside Saudi Arabia, using either their factory staff or professional staff in foreign countries. The western group seem to prefer to design their products in their parent company outside Saudi Arabia, which means usually either in the United States or the United Kingdom, while the Japanese group prefer to maintain product design in their parent companies in Japan. The Saudi companies prefer to contact professional staff from western countries to seek advice to help in the design of their products to an international standard, which would enable them to compete in the international market.

The product design cycle for all three groups is reasonable. In the interviews conducted later with some senior managers, they emphasised the importance of the product design for the petrochemical product as competition in the international market is very intense.

The Saudi group seem to take slightly more time in their product design cycle compared to the other groups of companies. This may reflect the fact that, unlike the Japanese and western companies, the Saudis do not use their own professional staff in a parent company for this function, and do not have sufficient experience of their own in this field. They have to seek advice from professionals from outside their companies, who are more likely to come from western countries (particularly the US or UK).

In the interviews with some Saudi managers, they indicated that there are several reasons for maintaining their product design outside Saudi Arabia: many of them have been educated in western countries, and they have been influenced by the orientation of their education, the technology available, the lack of difficulty in communication with western companies in this field (as many Saudi managers speak reasonable english) and they may also wish to maintain the friendship and contacts that they established while they were studying in the west.

There is also no significant difference between the groups in the number of product tests; this is because of the nature and sensitivity of the product that they manufacture, as was explained by some managers in their interviews. The Saudi group, though, seem slightly less concerned about the number of running product tests. The Saudi group expressed more concern about the cost of pilot testing and

leading time (the period between production and reaching the market) than the other groups. Both the Japanese and the western groups worried about leading time, but not to the same extent as the Saudi group. This may reflect the high level of competition within this petrochemical sector in the world market, which requires good product design at a lower cost and in the shortest possible time.

In Table 66 the three groups seem to receive their raw materials through two different channels: locally from a single supplier (the state Petromin company) and internationally from different suppliers. The western and Saudi companies import their raw materials from either the US or the UK, while the Japanese import theirs from Japan.

This shows up in table 67, where there is little difference for the three groups in terms of the proportion of manufacturing costs that they attribute to the cost of materials: they buy most of their raw materials locally from Petromin, so there is little difference to the companies in this area. Differences may result from the effect of changes in currency values, as the Saudi Riyal is tied to the dollar for its value, which means therefore that the prices of materials bought in dollars will not change, while those bought in other currencies, such as sterling or Yen, may be effected.

The Japanese and western companies rank labour costs higher than the Saudis do. This reflects the policy of the Saudi companies in bringing employees from Third World countries, such as India and Egypt, to work in their factories, whereas the other companies bring more employees from Europe, the United States or Japan, who will be more expensive.

The Saudis do estimate their manufacturing overhead costs as being higher than the other two groups. This may reflect a lower productivity of their operations, while the Japanese and western companies may be more effective in terms of efficiency and productivity in running their manufacturing plants. This can be linked to the weaker management skills of the Saudis compared to their foreign competitors.

When discussing the number of suppliers, the Japanese claimed to use fewer suppliers than either of the other groups. This reflects the characteristic of Japanese management of using a smaller number of suppliers and building up relations with them, and this is reflected in the length of contact that the suppliers have with the Japanese companies as opposed to the western and Saudi groups.

The policy of the Saudi and western companies is to have little trust in a single supplier; this is because they feel at risk if they have to rely on a single supplier, either that the supplier will increase prices or that they will be unable to fill an order, and also because they have a policy of seeking the cheapest quote for supplies.

As a result of this policy, the Saudi and western companies emphasise price and supplier performance as one of their criteria for selecting suppliers. The Saudis also use their personal relationships in this area, which reflects the importance of this area for the Saudi managers. The Japanese rely on the quality of performance by the supplier and a system of mutual trust as their basis for making these decisions.

The Japanese also involve their suppliers far more in their quality improvement policy than the other two groups; this has two results: first, there is no difference between the groups with regard to the local supplier, as the same company, Petromin, supplies all of them; and secondly, supplier relations are a traditional element of

Japanese management, and they build up a relationship of trust with their suppliers by using only one source of raw materials. As a result of this, they can establish a formal link to involve the foreign suppliers in quality management

The western and Saudi companies change from one supplier to another according to the prices that the suppliers offer, and as a result of this policy, it is difficult to build up relations with their foreign suppliers, and equally difficult to involve them in a quality improvement programme.

Quality inspection staff approve all incoming raw materials in the western and Saudi companies, whereas the Japanese use this method in addition to working with their suppliers to maintain quality. The Saudi and western companies use a traditional approach to quality management, while the Japanese use a system of maintaining quality by working with their suppliers and inspecting during processing.

There is no major difference in the application of Just in Time techniques between the three groups, because of the nature of the product. It is not a line production type of product, so such techniques are not particularly appropriate to the production process in this industry. It can be applied to the raw materials side of the process, which have are imported. This system is only being introduced, and has not been carried out fully as yet. However there may be problems in properly developing such a system when the products have to be imported rather than produced locally to order.

The Japanese group consults the production workers to a greater extent than their Saudi and western counterparts, and also give them a greater level of responsibility. This may reflect the earlier results, where the Saudis consulted with top management and have little confidence in their workers, while western companies consult top and

middle managers as they do not want to delegate authority and responsibility to a lower level and they do not have the same working experience on the shop floor as the Japanese managers have.

It seems that the Saudi and western groups give less responsibility to their production workers, but when this does have to take place, due to the nature of the manufacturing process, they focus the responsibility on an engineer or foreman, rather than the ordinary workers. This explains why in Table 77 there is little significant difference among the three groups in the level of authority given to the workers. The nature of the production process requires that the authority to stop production is available on the shop floor.

The Japanese rely on a process of daily checks on the machinery by the operators, whereas in the Saudi and western companies they rely on the maintenance departments to do this sort of work to a greater extent, as in some cases the operators have to make daily checks due to the nature of the machinery. The Japanese prefer to use a system of investigating a problem themselves and trying to develop their own solution rather than delaying production and calling the maintenance department, which is the system used by the western and Saudi companies.

6.5 Evaluation of Research Findings

The following section evaluates the findings of the previous section, which considers management philosophy, management practices and production management.

6.5.1 Evaluation of Findings: Management Philosophy

This section deals with findings relating to management philosophy, which have been summarised in Chapter Five.

The first finding of the research relating to management philosophy was that the Japanese were less concerned about profits than their western or Saudi competitiors. Abegglen and Stalk (1986) who found that the Japanese were more interested in growth and increasing their market share rather than short term profitability, as did Wong, Saunders and Doyle (1987).

The next finding was that the Japanese and Saudi groups prefer to employ younger people than the western companies. Johnson (1988) stated that Japanese employers prefer to have such employees as a result of the conditions in Japan where the unions aim at "living wages graduated by age" making younger people cheaper to employ than more experienced workers, whereas the policy of western unions was "equal pay for equal work", which makes older experienced workers cheaper than younger ones. As a result of this the Japanese are able to invest more in employee training and education, as there is little feeling that the employee will leave to join a competitor. The employees have no reason to oppose technological innovation, as they do not fear that they are replaceable.

The Japanese emphasised the characteristics of age, attitude and ability to co-operate in their selection of the work force. This reflects the conclusions of Johnson, as discussed above. Robbins (1983) stated that the basic criteria for selecting new employees were moderate views and the ability to get on well with others, which Schroeder, Sakakibara, Flynn and Flynn (1992) also commented on. O'Connor (1983) indicated that the Japanese believe in teamwork and group functioning. Hamaguchi (1988) repeated this conclusion, when he indicated that Japanese group loyalty was a matter of working together to achieve group objectives as a form of enlightened self interest, rather than submission.

Johnson (1988) discusses the western attitude of selecting employees according to the range and level of skills that they possess. Western union policies encouraged employers to recruit older, more experienced employees as they were cheaper than younger employees.

Both the Saudi and western groups gave great emphasis to the ability of employees to speak English and their background knowledge. This contradicts what some other writers have said, as for example Hauser (1983) indicated that English was the only foreign language that the Japanese felt comfortable working with. This does support what other writers have indicated; Schroeder, *et al*, (1992) indicated that one of the problems for Japanese companies in America was the lack of communication skills in English among the Japanese managers.

The western companies also emphasised the importance of their employees attitudes in motivating their staff, as they use a system of satisfying each individual's needs. This agrees with Crocker, Charney and Sikleunechzu (1984), who showed that in

North America there is a stress on the individual and self-improvement of well being, which he contrasts with the Japanese system of mutual dependence and group consciousness.

The next finding of the research was that the western and Saudi companies believe more in the use of technology than the Japanese, who believe that their companies are more labour intensive. Wallender (1978) states that there are problems in applying high technology in developing countries; this is contradicted by the evidence for Saudi Arabia.

Both Durlabhji (1983) and Hauser (1983) found that the relationship between the employees and their employers to be very close in Japanese companies. This reflects the findings of the current research, which has found that there is a closer relationship between the company and all its employees than in both the Saudi and western companies.

The research of Beresford (1983) also reflects this, as he found that section managers in Japan spent large amounts of time away from the workplace with their subordinates. This is done to build up a closer relationship that would strengthen their working relationship. Crocker, Charney and Sikleunechzu (1984) found that individual and corporate goals are blended in Japanese companies as a result of the mutual dependence and sense of belonging to a group. He contrasted this with the attitude of workers in American companies, where employees rarely feel any association with the goals of their employing organisation.

The research of Rehder (1983) showed that relations between managers and shop floor employees in the western companies are not of the same quality as they are in Japanese firms.

The Japanese involve all their employees in the process of improving product quality; Fukuda (1983) stated that changes and new initiatives come from those who are closest to the problems in Japanese corporations; Bolwijn and Brinkman (1987) indicated that the Japanese system of Total Quality Management relies on everyone being involved in planning. Harrington (1982) comments that Japanese workers have a very broad understanding of their company as a result of working in many different departments.

The research by Bolwijn and Brinkman (1987) also discusses the Japanese management's commitment to quality, which the current research has proved to be very strong. They defined one of the characteristics of the Japanese system of Total Quality Management as requiring the commitment of top management to the process of quality improvement.

Prentice (1984) showed that Japanese companies generally regard research and development as being vital to long term success and growth. He also showed that they spend more in this area, and employ more researchers than companies from other countries. This research has shown that this is the case in the petrochemical industry in Saudi Arabia, that the Japanese spend more in research for improving product quality than their competitors.

This research has also showed that the Japanese work closer with their suppliers, which agrees with the findings of Schroeder, *et al*, (1992). They referred to the Japanese as working closer with their suppliers than their American counterparts. Similarly, Horn, Grubb-Ingram and Masson (1987) found that a Japanese subsidiary in the UK had established taken trouble to develop good relations with its suppliers. This had resulted in significantly less inventory and virtually no part shortages, which their local competitors were not able to match.

The findings of this research concerning the conflict between the companies and the government are the opposite of those by Wallender (1978). He indicated that it was normal for there to be conflict and distrust between these organisations in developing countries. This is the reverse of the case within Saudi Arabia, as the Saudi companies seem happier with their relations with the government far more than either the Japanese and the western companies.

6.5.2 Evaluation of Findings: Management Practices

This section deals with findings relating to management practices, which are summarised on Chapter Five.

All three groups were found to use short term planning, and this was explained in terms of the difficulties of planning in relation to the unpredictability of the external environment. This is supported by the findings of other researchers, such as Yavas, Kaynak and Dilber (1985), who found that many companies in developing countries do not use a systematic approach to planning, and concentrate on short term planning.

They found that such companies tend to plan for no more than one year in advance, because of the lack of stability and predictability, which makes accurate forecasting difficult. Jaeger (1990) found that such a system of planning is common among local managers in developing countries, as their thinking is very tradition based, and therefore they only plan for the short term; this has an effect on quality, goal setting, finance, and hence managerial effectiveness.

The nature of the external environment also means that it is difficult for non-native managers to plan in the long term; although Saudi Arabia is politically and economically stable, there are problems in long term planning due to economic fluctuations (both within Saudi Arabia and in the world market for oil), the lack of available data and changes in government policies and regulations.

In the Saudi companies, most general policy decisions are made by a small group of top managers and are filtered down through the organisation. This can be compared with the findings of Shejwalker (1987) in India, where managers were found to operate in a "caste system" of decision making, which reduced the opportunities for informed discussion, participation and objective decision making.

In the Japanese companies the policy decisions are generally communicated within the company, and there is a much greater awareness of the goals and quality policy of the company throughout the work horse, which reflects the findings in the study by Kagona, Nonaka, Okumura, Sakskibara, Komatsu and Sakashita (1981). In the western companies the policies were understood by the departmental managers but not among the shop floor workers.

Badaway (1980) noted that Middle Eastern managers used highly personalised communication styles, and use a large amount of their time in supervising, inspecting and communicating with their subordinates, and this reflects the use of unwritten policies in these companies. There is a great requirement for trust in the power structure of the Saudi companies, and Lee (1982) found that employees are sensitive to criticism.

Robbins (1983) showed that Japanese companies generally use very open forms of communication, and operate in work groups, and this explains how they use an unwritten system of policy transmission. Ouchi (1982) has stressed the importance of the work group for Japanese managers for decision making and responsibility. O'Connor (1983) found that part of Japanese corporate philosophy is a statement of broad objectives and responsibilities for the company.

Although the top management in the Saudi companies seem to be less involved in planning for product quality than in the other companies, this reflects the less thorough and systematic planning style of the Saudi managers, and is based on subjective judgements. This was discovered by Badaway (1980), who also found that the older managers were most in favour of participation in goal setting, followed by the younger managers, meaning that the middle aged were least in favour of this.

Both the Saudi and Japanese groups rely on internal training methods for their employees while the western companies rely on bringing professionals from abroad to carry out training, or sending employees abroad for this.

The reason for the Saudis' preference for internal training is their reliance on family and relations for filling vacancies, as shown by Ali and Al-Shakhis (1991), and so they prefer to keep such training within their sphere of contact. It also reflects the importance of close personal contact for Saudi employees, which would be more effectively achieved through internal training, as well as preferring not to bring outsiders into their companies. This also shows a greater commitment to their workers.

Al-Nimir and Palmer (1982) showed that Saudi managers had a strong preference for staying within contact of their immediate family, more than they were willing to move for high salaries and prestige.

Abegglen (1958) found that the Japanese prefer to recruit from within their own organisations, and this is also the case in their training policy.

The western companies' preference for training employees abroad was expressed by Lumsden (1982) who indicated that the western companies feel that the easiest way for Arab employees to gain familiarity with technology and business skills was to give them training in the west in academic institutions.

The Japanese are more dedicated to the product quality than the other groups, and are more concerned about their customers and their employees. O'Connor (1983) stated that all of these areas of concern were given priority by Japanese managers.

The three groups of companies use different levels of consultations within their organisations. In the Saudi group, top managers give strict orders, which have to be followed, which are based on their own knowledge and experience. Meade and Whittaker (1967) found that Arab managers were authoritarian rather than democratic, and that they discouraged participation in decision making, but other researchers have found that younger managers in Saudi Arabia prefer a more democratic system of decision making. Ali and Swierez (1985) found that there was a preference for a consultative style.

There is a combination of the traditional Saudi qualities of respect for elders and those with responsibility, the requirements of a tribal society where family groups should be consulted, and the teachings of Islam, which state that there should be open discussion. The conclusion is that although there is an appearance of authoritarian management, there is actually a great deal of consultation in decision making through informal means and discussions.

In the western companies, there is a different form of consultation in the decision making process, which involves the heads of affected departments only, whereas in the Japanese group there is a need for a general consensus before a decision is agreed upon, as shown by Abegglen (1958).

This difference in decision making styles has implications for the length of time required to execute the decision and the level of resistance that changes face. Badaway (1980) showed that Saudi managers take the trouble to examine the entire circumstances of a situation and take a longer time to reach a decision, which was described as being similar to the Japanese style of decision making. Hence in both

these groups of companies decisions take longer to be reached than in the western companies.

The use of an additional informal channel of communication in the Saudi companies reflects the importance of contacts and relationships within an organisation for Saudi employees. This results in a greater proportion of a Saudi executives' time being taken up in supervision and control tasks than is the case of the other groups of companies. This style of management has been discussed by Badaway (1980) and Lee (1982).

The concern that is shown by the employees of the different companies reflects the style of management in each group. The Japanese employees show concern for the entire organisation that they work for, while employees of the western companies tend to be interested only in the department in which they work. The western concern with their particular department is reflected by the research of Lim(1987).

The Saudi employees seem to display a mixture of both of these concerns. This reflects the teachings of Islam, which emphasises the concerns of both groups and individuals, but also indicates that group concerns should come first, and that individuals' concerns should not conflict with the group interest.

Wong, Saunders and Doyle (1987) found that many companies in the UK had a far more functional structure than their Japanese competitors. Arbrose (1982) showed that Saudi managers in general did not use the same system of rigid functioning as shown in western companies, and that there was a feeling of general responsibility within a group.

All three groups emphasise the importance of discussing their quality objectives, but there is a major difference in the role of the discussions within each group. Ali and Al-Shakhis (1985) felt that many Saudi mangers preferred a consultative management style.

This is reflected by the research of Badaway (1980), who found that the older and younger managers in Saudi Arabia preferred participation in goal setting, while the middle aged managers were not so strongly in favour. This disagrees with the research by Shejwalker (1987) in India who found that in developing countries there tended to be a rigid structure which prevented objective analysis and informed decision making.

The Japanese seem to face less resistance from their employees in carrying out amendments to their original plans than either the western or Saudi companies. According to Crocker, Charney and Sikleunechzu (1984), this is caused by the long term commitment to their employees by the Japanese companies, which means that they are less likely to resist change as they have no need to fear innovation and change.

Alaki (1979) found that Saudi employees were unwilling to observe strict rules, and this may also be the case with structural changes within the company, as they have a general resistance to orders. This reflects the individualistic nature of the Saudi mind which inhibits the use of the sort of abstract thinking which is required in understanding the planning for a large organisation. This does also contradict the teaching of Islam referred to in Chapter II, which called for the relationship between the employer and the employee to be that of brotherhood.

The research by Harrington (1982) indicates that the employees of Japanese companies would be happy to carry out changes in a company plan, and this is supported by this research, as they seem to carry out such changes faster and with less resistance than the other groups of companies.

The employees of the Saudi group seem to understand the concepts of authority and responsibility in terms of their individual relationships, rather than in terms of group responsibility. This supports the research by Meade and Whittaker (1967), which shows that Arab managers believe that by concentrating authority at the top of the organisation, they will achieve higher morale and greater productivity.

In the Japanese companies there is a greater sense of group responsibility and a closer relationship between superiors and subordinates, which supports the research of Lincoln (1989), who found that Japanese superiors did not exercise direct authority, but avoided direct control over their employees; they prefer to give authority to the workers.

Given the importance of personal communications and relationships, it is not surprising that in the Saudi companies the management rely on an informal network of personal relationships to communicate with their employees. Badaway (1980) noted the highly personal nature of communication in the Saudi business community and the importance of personal influence, and Lee (1982) referred to Middle Eastern employees as being highly sensitive to face to face criticism.

Wright (1987) indicated that Arab managers are loyal to their immediate superiors rather than to their organisation. Success depends on personal contacts and good use of these contacts. The cause of this is the original nature and rapid development of Saudi society from a tribal culture towards an industrial society.

This may suggest the reasons why the Saudi companies are similar to the western companies in stressing individual motivation, rather than the Japanese system of group motivation. Tabilbi (1982) shows that the Islamic system is based on the guarantee of the rights of each individual if this does not contradict the interests of the community.

Crocker, et al, (1984) contrasted the corporate value systems of North America and Japan, and found that in Japan the stress is on group harmony and mutual dependence, which results in their work group style of motivation, whereas the American system stresses the individual and self-improvement.

Al-Wardi (1951) showed that the Saudi character consisted of two elements, the sedentary element and the nomadic Bedouin, giving qualities such as pride, show, endurance and cunning. This means that direct expressions of authority should be avoided when dealing with Saudi employees, as these may cause offence; a more effective form of motivation is to appeal to the employee's sense of pride and desire for prestige and recognition.

The study by Haner (1980) showed that many Arabic people were more motivated by human values, such as status, esteem and responsibility, rather than material ones. Al-Nimir and Palmer (1982) showed in their research that managers in Saudi could

not be persuaded to move away from their parents and other relations, even with the motivation of high salaries or prestige.

Al-Twaijri (1989) found that Saudi managers equalled American managers in their desire for self-esteem, prestige, authority and opportunities for independent action. Flores (1972) established that job security and pay were the primary motivators for non-managers, while managers sought recognition as much as financial reward, in the very material sense of impressive titles and a large office.

This can be compared with the motivation that is used by the Japanese, who according to Beresford (1983), rely on group motivation, and employees are evaluated by their ability to work within a group, and rarely use purely financial incentives; and with the motivation used by western companies, who reward individual high performers with material rewards.

The Japanese spend more time training their employees, and this agrees with the research by Brown and Read (1984) who found that because the Japanese companies are used to employing staff on a full lifetime basis, they expect to receive the full benefits and rewards from the time and resources spent in training them.

In addition to this, the Japanese give a more general training programme to their employees, whereas the western and Saudi companies give very specialised training. According to Beresford (1983), this reflects the policy of companies in Japan, where training for managers is based on the process of gaining varied experience through working in many different departments, rather than being seen as a specialist in one field, such as marketing. As a result of this, employees have a greater understanding of the company as a structure, and also identifies more with the company.

For the Saudi and western companies there is a fear that the employees will leave within a short period of completing his training, and the company will not receive the benefit of the expenditure on training.

The Japanese and western companies rely more on statistical systems of quality control than their Saudi counterparts. This indicates that the Saudis use a more qualitative approach than the quantitative approach used by the foreign companies. These companies rely on the higher level of education among their managers, who will be able to follow the bare statistics of a report, whereas the Saudis prefer to use professional staff to carry out this work, and give a more clear report to their management.

Flores (1972) indicated that Saudi managers tend to focus their attention on decision making and supervising their staff, and therefore they rely on a detailed report coming to the manager, rather than interpreting the statistics and raw data themselves. This can be seen as an illustration of the power structure within the Saudi companies, as the reports on quality control will be provided by professionals delegated to deal with this area, rather than expecting the staff to carry out quality control checks themselves, as in the Japanese companies.

6.5.3 Evaluation of Findings: Production Management

This section deals with findings relating to production management, which have been summarised on Chapter Five.

All three groups of companies carry out product design outside Saudi Arabia. This reinforces the findings of two other studies; Houser (1983) found that many Japanese subsidiaries in the UK send up to ninety per cent of their design work to their parent company in Japan, and Horn, Grubb-Ingram and Masson (1987) stated that most Japanese product design work is carried out in Japan, rather than by design and development staff in the manufacturing plant. The latter work showed that UK companies use product design staff in their parent companies.

All three groups of companies have a similar time cycle; this may reflect the nature of the petrochemical industry. This disagrees with the findings of other researchers, such as Horn, Grubb-Ingram and Masson (1987) who indicated that companies in the UK rush through their product design stage in an attempt to reach the market first, and there is little co-operation between the design section and the engineers or the vendors.

Schroeder, *et al*, (1992) found that both the lead time (length of time to fill an order) and the cycle time (from ordering of raw materials to delivery) were greater for Japanese companies than for top US companies, as the requirements of their quality process and the fact that their raw materials have to be ordered from Japan added constraints and delays. Alden (1987) suggested that Japanese companies run longer

product tests due to the rigid and time consuming regulations that the Japanese government applies to products there.

These comments apply generally and are not specific to this industrial sector, so they should be treated carefully.

Abegglen and Stalk (1986) identified a strategy among Japanese companies of increasing their market share so that its volume of business will increase at a greater rate than its' competitors. They are not concerned about short term profits as their western competitors tend to be, as was noted earlier in this survey.

Schroeder, *et al*, (1992) claimed that the Japanese practice of importing raw materials from their home country slowed their production rate so that they were slower than their local US competitors. Horn, Grubb-Ingram and Masson (1987) also indicated that this was the case, as about 40% (which they estimate as a high proportion) of bought in parts in Japanese subsidiaries in the UK came from the parent company in Japan.

The next finding of this research was that all three groups estimate the proportion of manufacturing costs from raw materials was similar. Horn, Grubb-Ingram and Masson (1987) estimate that raw material costs represent between seventy and eighty per cent of total manufacturing costs, while labour and overheads represent approximately ten per cent each.

There is little difference in the contribution to costs of raw materials because all the companies buy most of their raw materials locally from a single supplier, the Saudi Petromin organisation. The companies import certain raw materials from outside

Saudi Arabia, and in the case of the Japanese and western companies, they buy them from the parent company; these are more expensive for the Saudi companies, because they have to buy them at full world market prices.

Labour is cheaper for the Saudi companies, because they use labour from third world countries, and use relatively fewer experts from the developed world who are more expensive. This is not particularly important, though, because labour costs only represent about ten per cent of the total cost, and it does not outweigh the fact that raw materials which have to be imported are more expensive for the Saudi companies than their competitors. The shortage of skilled labour and experienced managers, combined with the Saudi unwillingness to move away from close family, makes such employees scarce, and more expensive to employ.

Traditionally, the number of suppliers used by western companies is high, and they have more than one supplier of components and materials to protect themselves against failures by the suppliers and to creative a competitive environment and thus lower prices. Oliver and Wilkinson (1988) found that some western companies had started to adapt their practices in this area to imitate the practice of the Japanese who have a small number of contractors who have long term contracts to supply parts to a very high standard.

However there is contradictory evidence from authors such as Horn, Grubb-Ingram and Masson (1987), who indicate that the long term relations of UK companies with vendors and suppliers had not particularly improved; typically, they have more than one supplier, and they do not make efforts to work closely with suppliers to improve their product quality.

The Saudi companies' principle deciding factors in their choice of suppliers are the price and quality, as well as personal contact. This is in accord with the research of Ali and Al-Ali (1991), who emphasised that Saudi customers demand high quality products at reasonable prices. For the Japanese companies, the most important elements are the relationship of trust that must exist and the quality of the product. This reflects much of what has been said about Japanese management.

There have been problems in applying this policy outside Japan, as shown in the research by Horn, Grubb-Ingram and Masson (1987), who indicated that the problems over quality occur with locally bought parts. Their research also showed that although some UK companies had employed the techniques of extensive product testing and verification without collaboration between the supplier and the production team. The improvements in such cases were noticeable, but not as significant as that in cases where such collaboration had taken place.

The Japanese companies' reliance on both quality inspection staff and the suppliers of incoming raw materials, rather than the system used by both the Saudi and western companies of just relying on inspection staff, shows how important the quality of relations with suppliers is in Japanese management. Schroeder, *et al*, (1992) showed that Japanese plants in the US used suppliers with a high level of quality certification which matched the level used by top class plants, but was superior to the traditional plants, and that they inspected incoming goods to a lesser extent. Similarly, Horn, Grubb-Ingram and Masson (1987) state that although extensive product testing takes place, this is not sufficient for Japanese companies; they also demand collaboration with the supplier to guarantee that the parts will be of sufficient quality.

Schroeder, *et al*, (1992) found that Japanese companies had succeeded in introducing Just in Time techniques to their plants in the US, but the report by Voss and Robinson (1987) showed that western companies had successfully applied some aspects of the JIT system, but where they had introduced, it was not fully employed and was applied in part. The conclusion of their report though was that many companies claimed to have benefited from the introduction of these processes.

In the Japanese companies there is a greater level of responsibility on the shop floor than in the other two groups. White (1980) refers to the recognition by all workers in the Japanese factories that he studied that they have a responsibility for quality control, and Schroeder, *et al*, (1992), also referred to it, indicating that Japanese managers gave shop floor workers authority to make decisions. Beresford (1983) indicated that one of the assumptions of Japanese management thinking was that the individual worker understands his particular job more than anyone else, and that if he is given responsibility then he will respond by being more motivated and will require less supervision.

Workers in Japanese factories show a greater responsibility for checking their machinery and repairing faults with it themselves than workers in the other groups. This reflects the work of Ouchi (1982), who discussed the "Theory Z" management style, which requires collective decision making and responsibility. Ouchi identified eight characteristics of Theory Z management; lifetime employment, slow promotion, non-specialised career paths, implicit control mechanisms, collective decision making, collective responsibility and a holistic concern for the employee.

The employees are more involved in finding solutions to problems at their work place in the Japanese companies, whereas in the other companies they have to wait for the maintenance department to make repairs.

The next chapter is a summary of the major findings of this research, along with the main conclusions.

CHAPTER SEVEN

Summary, Conclusions and Recommendations

7.1 General Summary of Thesis

This thesis seeks to identify the characteristics of Japanese and western management practices concerning product quality, and their transferability to the petrochemical organisations in Saudi Arabia.

Chapter One discussed the purpose and value of this research. Chapter Two introduced the management practices of developing countries and Saudi Arabia in particular to assist in the understanding of this subject. The experience of western countries in transferring their management practices to developing countries shows that there are examples of both success and failure. In transferring their management practices to developing countries, the Japanese companies seem to have less experience than western companies, especially in the case of Arab countries.

To carry out this study, a model has been developed in Chapter Four, adapted from the theoretical models of Neghandi and Frasada (1971) and Horn, Grubb-Ingram and Masson (1987). This model suggests that product quality can be achieved through improvements in management philosophy, management functions, and production management, as is shown in the questionnaire design (Appendix 2).

Chapter Five shows the results of the questionnaire analysis and Chapter Six discusses the findings of the research and evaluates these findings in terms of the

literature on this subject. Chapter Seven (this chapter) summarises the major findings and conclusions of this study, and makes some recommendations for future research.

7.2 Summary of the Findings of the Research

The companies studied in this research divide into three groups, which are defined as the Japanese group (Japanese and Saudi joint ventures), western group (western and Saudi joint ventures) and the Saudi group (Saudi companies).

The following summary reflects the major findings of this research concerning these three groups

7.2.1 Management Philosophy

7.2.1.1 Similarities between the Three Groups

All three groups have a similar management philosophy for determining their management objectives, competition criteria and the role of quality in contributing to the success of their factories. The three groups emphasise the importance of customer satisfaction as the primary objective, followed by obtaining the available resource and lastly maintaining high profits. The three groups indicated that quality of product and prices were the main criteria for competition, and they insist that quality has contributed greatly to the success of their factories.

7.2.1.2 Similarities between the Western and Saudi Groups

There is some similarity in management philosophy between the western and Saudi groups which is different from the Japanese philosophy. These similarities in management philosophy between the western and Saudi groups involve emphasising the characteristics of knowledge and educational achievement in their choice of employees. Their employees' attitude is less effective in improving product quality and they emphasise a capital approach to improving product quality rather than a labour approach. They have a poor relationship between their management and the employees, which is a result of the managements' approach in their treatment of both their managers and their workers; they do not involve either their customers or their suppliers to a great extent in determining the quality of their products.

7.2.1.3 Similarities between the Japanese and Saudi Groups

The only similarity in management philosophy between the Saudi group and the Japanese group is in their both using young employees rather than older, more experienced workers.

7.2.2 Management Practices

7.2.2.1 Similarities between the Three Groups

There are various similarities in the management practices of all three groups of companies.

All three groups use short or medium term planning; employees in all three groups understand the main objective of product quality. All three groups use formal structures in their factories, and their management discuss their objectives with both different departments and the relevant department. The three groups indicated their management sometimes introduce modifications to their original plans.

The three groups have a similar understanding of the terms of responsibility and authority as individuals. The three groups indicated their management used formal systems of communication for work contact. Management in all groups spend similar amounts of time in training new employees, and maintain similar levels of product standard. The three groups indicated that their management act quickly to improve the quality of their product.

7.2.2.2 Differences between the Three Groups

The three groups use some different management practices in conection with motivating their employees and consulting them in establishing quality objectives; the Saudi group give more emphasis to the motive of special recognition, quick promotion and greater delegation of authority for motivating their staff; the western group rely on cash received and quick promotion; the Japanese companies use the motives of teamwork and encouraging their employees involvement.

The Saudi group consult their top managers in establishing their quality objective, while the western group consult more with the different departments, while the Japanese use a wider system of consultation among their employees.

7.2.2.3 Similarities between the Western and Saudi Groups

The western and Saudi groups are similar in the following respects.

They tend to consult their employees less than the Japanese group in decision making, they spend more time in carrying out their decisions regarding product quality, their managers and workers offer greater resistance to modifications to the original plan of the company, and they have less sense of group responsibility.

There was a tendency not to delegate authority for the improvement of product quality (although this was for different reasons), while both groups use an approach of motivating through individual methods, while neither group seemed to invest in their employees as much as the Japanese group, and as a result of this both give more emphasis to specialised training for their new employees. Both Saudi and western managers give more emphasis to the use of external professional inspectors for quality inspection. The commitment of their top management to product quality is far less than the Japanese.

7.2.2.4 Similarities between the Japanese and Saudi Groups

Both the Japanese and Saudi groups maintain similar management practices in relation to discussion with their employees, and use an unwritten policy, emphasised by their top management as the main source of information for establishing quality objectives. They used more internal seminars and training for their managers to improve their product quality, and they rely more on internal training for their workers.

Both groups take more time in their decision making process; they have fewer departments in their organisational structure than the western group, and the interaction between the departments is more co-operative, as both groups' employees are more concerned about their whole organisation rather than their individual department. Both these groups use regular meetings and telephone calls as the main means of communication between their employees.

7.2.3 Production Management

7.2.3.1 Similarities between the Three Groups

All three groups have similar practices for production management in the following respects: the location of product design (outside Saudi Arabia), the time spent in the product design cycle, the number of running product tests, the non-application of Just in Time techniques, and the authority on the production line to stop production.

7.2.3.2 Similarities between the Western and Saudi Groups

The western and Saudi groups show similarities in buying their materials from western countries, in the number of and type of relationship with suppliers, who they do not involve in quality improvement. They both rely more on quality staff to inspect incoming raw materials; they consult their production workers less in designing the production lines and also give them less responsibility, and give less emphasis to the performance of daily checks by the machine operators.

7.2.4 Conclusion

The findings of the research suggest that both Japanese and western management practices have contributed significantly to improvements in the product quality of the Saudi petrochemical industry.

The findings of the research show that both the Japanese and western companies have employed their management philosophies in their subsidiaries in Saudi Arabia to a considerable extent. However it is clear that these findings shows greater similarities in the western and Saudi management philosophies.

The Japanese and western companies have been influenced in their management practices by the environment in Saudi Arabia to a considerable extent. This finding supports the third school of thought which recognises the influence of culture in management. The summary of the findings relating to the differences in management practices in the three groups emphasises the view of the second school, which saw management as culture based, and cannot be transferred from one culture to another.

The similarities in management practices in the western and Saudi groups reflects the extent to which western companies are able to transfer their management practices to the petrochemical organisations in Saudi Arabia, while the same is true of the similarities in the Japanese and Saudi companies.

In their production management practices, there were more similarities between the western and the Saudi groups which suggests that the Japanese production management practices may face some difficulties in transferring their production management to Saudi Arabia.

256

The transferability of management practices abroad seems not to reach a definite conclusion, which suggests that more study and research will have to be conducted in this area to assist in the understanding of this important subject.

7.3 Limitations of the Study

There are some limitations of this research that can be summarised as follows.

The model applied in this research was adapted from Neghandi and Frasad (1971) and Horn, Grubb-Ingram and Masson (1987). This model has not been tested previously, and therefore further improvement may be necessary through further research.

This study aimed to provide general guidelines for the transferability of the Japanese and western management practices to Arab countries and Saudi Arabia in particular. For this reason, the researcher made no attempt to show the relationships between those variables involved in this study where the objectives of this research are exploratory rather than explanatory.

There is some difficulty in obtaining data related to management practices in developing countries and Saudi Arabia in particular; most data deals with management functions in general.

There is difficulty in obtaining data on transferring Japanese management practices to the developing countries, especially in the Arab world. This seems to be the first study of this kind made in the Middle East.

This study is concerned with companies working in one sector only (the petrochemical industrial sector), so the results and findings may not be entirely applicable to other sectors.

The researcher carried out the fieldwork of the study in Saudi Arabia during the Gulf War, while the pilot study was conducted in the United Kingdom, so the researcher faced some difficulties due to the situation in the Middle East; the researcher found it extremely difficult to interview managers from the Japanese, western and Saudi companies to clarify some responses to the questionnaire, as he was only able to interview two senior managers from each company in a very constrained time.

This study was limited to Japanese and western companies working in Saudi Arabia; it does not make reference to the parent companies based abroad, whose practices may be different.

7.4 Suggestions for Future Research

There is a need to conduct more research into the subject of transfering Japanese and western management practices to the developing world and Saudi Arabia in particular.

There is a need to invlove companies from several Arab countries, Japanese and western subsidiaries in these countries and their parent companies in Japan and the west. Future research could contribute more to understanding the subject of management transferability. This is important to managers working in multinational companies, as it will enable them to understand one another better.

There is a need to apply more research to identify the characteristics of Arab management practice, which is very important in understanding the Arab manager's mind in conducting business with them, especially those who work in multinational companies, who may face a different business environment from their home countries.

This study may be repeated with companies in Saudi Arabia in different sectors and of different sizes, to investigate the influence of organisational variables in the management practices as suggested by some researchers.

It may be useful to consider in any future research studying the decision-making process, the leadership style and the motivation approaches involved in these companies in more detail.

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Appendices

Appendix One

Tables of Results of Questionnaire Analysis

Table 1a: Managers' Job Titles Distributed According to Factory Ownership.

Factory Ownership		Job Title		
		Top Manager	Middle Manager	Row Total
Complete Saudi	No.	24	30	54
	%	44.4	55.6	36.5
Saudi & Japanese	No.	17	19	36
	%	47.2	52.0	24.3
Saudi & Western	No.	27	31	58
	%	46.6	53.4	39.2
Column Total	No.	68	80	148
	%	45.9	54.1	100.0

Table 1b: Statistical Results.

Chi-Square	D.F.	Significance
0.0812	2	0.9602

@ **Statistics:** Crosstabulation;   P ⟩ 0.05

Table 2a: Length of Time of Managers' Employment in the Factories According to Factory Ownership.

Factory Ownership		Years		
		(1) 1-4	(2) 5-10	Row Total
Complete Saudi	No.	26	34	60
	%	43.3	56.7	37.5
Saudi & Japanese	No.	20	20	40
	%	50.0	50.0	25.0
Saudi & Western	No.	28	32	60
	%	46.7	53.3	37.5
Column Total	No.	74	86	160
	%	46.3	53.7	100.0

Table 2b: Statistical Results.

Factory Onership	Mean Rank	Chi-Square	Significance
Complete Saudi	81.33		
Saudi & Japanese	75.40	4.2356	0.1203
Saudi & Western	79.50		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistic) $P > 0.05$

Table 3a: Age of Factories According to Factory Ownership.

Factory Ownership		Factory Age (Years)			
		(2) 5-7	(3) 8-10	(4) Over 10	Row Total
Complete Saudi	No.	12	23	0	35
	%	34.3	65.7	0.0	31.8
Saudi & Japanese	No.	7	21	2	28
	%	25.0	74.9	7.1	25.5
Saudi & Western	No.	17	30	2	47
	%	36.0	63.9	4.3	42.7
Column Total	No.	36	70	4	110
	%	32.7	63.6	3.6	100.0

Table 3b: Statistical Results.

Factory Onership	Mean Rank	Chi-Square	Significance
Complete Saudi	52.01		
Saudi & Japanese	62.04	2.2315	0.3277
Saudi & Western	54.20		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistic) $P > 0.05$

Table 4a: Total Number of Employees Distributed According to Factory Ownership.

Factory Ownership		Number of Employees			
		(1) 1-250	(2) 251-500	(3) 501-800	Row Total
Complete Saudi	No.	22	19	19	60
	%	36.7	31.7	31.7	37.5
Saudi & Japanese	No.	0	24	16	40
	%	0.0	60.0	40.0	25.0
Saudi & Western	No.	10	23	27	60
	%	16.7	38.3	45.0	37.5
Column Total	No.	32	66	62	160
	%	20.0	41.3	38.8	100.0

Table 4b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	67.80		
Saudi & Japanese	91.10	8.6710	0.0131
Saudi & Western	86.13		

@ **Statistics:** The kruskal -Wallis One-Way Analysis of Variance (Nonparametric Statistic) $P < 0.05$

Table 4c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	836.0	-2.7504	0.0060
Saudi & Jap. / Saudi & West.	1140.0	-0.4674	0.6402
Complete Saudi / Saudi & West.	1402.0	-2.2244	0.0261

@ **Statistics:** The Mann-Whitney Test

Table 5: Percentages of Saudi and Non-Saudi Employees Distributed According to Factory Ownership.

Factory Ownership		Nationality		
		Saudi	Non-Saudi	Row Total
Complete Saudi	No	44	16	60
	%	74.1	25.9	37.5
Saudi & Japanese	No.	29	11	40
	%	73.15	26.85	25.0
Saudi & Western	No.	43	17	60
	%	72.35	27.45	37.5
Column Total	No.	116	44	160
	%	72.5	27.5	100.0

@ **Statistics: Means**

Table 6a: Management's Objectives According to Factory Ownership.

Factory Ownership		Objectives			
		High Profit	Available Resources	Customer Satisf.	Row Total
Complete Saudi	No.	13	22	22	57
	%	22.8	38.6	38.6	38.3
Saudi & Japanese	No.	4	13	21	38
	%	10.5	34.2	55.3	25.5
Saudi & Western	No.	13	17	24	54
	%	24.1	31.6	44.4	36.2
Column Total	No.	30	52	67	149
	%	20.1	34.9	45.0	100.0

Table 6b: Statistical Results.

Chi-Square	D.F.	Significance
4.1835	4	0.3817

@ **Statistics:** Crosstabulation; P > 0.05

Table 7a: Average Age of Employees Distributed According to Factory Ownership.

Factory Ownership		Average Age of Employees (Years)				
		(2) 26-30	(3) 31-35	(4) 36-40	(5) Over 40	Row Total
Complete Saudi	No.	30	29	1	0	60
	%	50.0	48.3	1.7	0.0	37.5
Saudi & Japanese	No.	19	21	0	0	40
	%	47.5	52.5	0.0	0.0	25.0
Saudi & Western	No.	23	33	4	0	60
	%	38.3	55.0	6.7	0.0	37.5
Column Total	No.	72	83	5	0	160
	%	45.0	51.8	3.1	0.0	100.0

Table 7b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	73.52		
Saudi & Japanese	74.69	6.9452	0.0310
Saudi & Western	91.35		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistic)   P < 0.05

Table 7c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	1180.5	-0.1576	0.8747
Saudi & Jap. / Saudi & West.	948.0	-2.0566	0.0398
Complete Saudi / Saudi & West.	1401.0	-2.3992	0.0164

@ Statistics: The Mann-Whitney Test

Table 8a: Characteristics Considered to be Most Important in Selecting Employees According to Factory Ownership.

Characteristics	Factory Ownership	Mean Rank	Chi-Square	Significance
Age	Complete Saudi	61.69	91.5029	0.0000
	Saudi & Japanese	138.29		
	Saudi & Western	60.52		
Skills	Complete Saudi	81.69	66.9548	0.0000
	Saudi & Japanese	53.99		
	Saudi & Western	110.32		
Attitude	Complete Saudi	72.57	34.2923	0.0000
	Saudi & Japanese	116.32		
	Saudi & Western	64.55		
Degree of Certification	Complete Saudi	101.65	23.9973	0.0000
	Saudi & Japanese	58.15		
	Saudi & Western	74.25		
Knowledge	Complete Saudi	94.22	30.0513	0.0000
	Saudi & Japanese	46.57		
	Saudi & Western	89.39		
Ability to Cooperate	Complete Saudi	69.19	33.6202	0.0000
	Saudi & Japanese	116.54		
	Saudi & Western	67.78		
Other	Complete Saudi	85.04	17.3376	0.0002
	Saudi & Japanese	98.70		
	Saudi & Western	62.57		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 8b: Statistical Results.

Characteristics	Factory Ownership	U	Z	P
Age	Complete Saudi / Saudi & Jap.	20.5	-8.5298	0.0000
	Saudi & Jap. / Saudi & West.	68.0	-8.2336	0.0000
	Complete Saudi / Saudi & West.	1733.0	-0.3961	0.6921
Skills	Complete Saudi / Saudi & Jap.	336.5	-6.2272	0.0000
	Saudi & Jap. / Saudi & West.	203.0	-7.0979	0.0000
	Complete Saudi / Saudi & West.	1008.0	-4.2334	0.0000
Attitude	Complete Saudi / Saudi & Jap.	556.5	-4.6173	0.0000
	Saudi & Jap. / Saudi & West.	410.5	-5.0694	0.0000
	Complete Saudi / Saudi & West.	1632.5	-0.9092	0.3666
Degree of Certification	Complete Saudi / Saudi & Jap.	545.5	-4.7288	0.0000
	Saudi & Jap. / Saudi & West.	960.0	-1.7196	0.0855
	Complete Saudi / Saudi & West.	1185.0	-3.3261	0.0009
Knowledge	Complete Saudi / Saudi & Jap.	437.5	-5.4929	0.0000
	Saudi & Jap. / Saudi & West.	605.5	-4.3116	0.0000
	Complete Saudi / Saudi & West.	1739.0	-0.3256	0.7447
Ability to Cooperate	Complete Saudi / Saudi & Jap.	441.0	-5.4470	0.0000
	Saudi & Jap. / Saudi & West.	517.0	-4.8958	0.0000
	Complete Saudi / Saudi & West	1719.0	-0.4343	0.6641
Other	Complete Saudi / Saudi & Jap.	984.0	-1.4349	0.1500
	Saudi & Jap. / Saudi & West.	647.5	-4.0920	0.0000
	Complete Saudi / Saudi & West.	1277.0	-2.7818	0.0054

@ **Statistics:** The Mann-Whitney Test

Table 9a: Contribution of Employees' Attitude to Improve Product Quality According to Factory Ownership.

Factory Ownership		Employees' Attitude					
		(1) No	(2) Little	(3) Fair	(4) Good	(5) Excellent	Row Total
Complete Saudi	No.	3	4	21	22	10	60
	%	5.0	6.7	35.0	36.6	16.7	37.5
Saudi & Japanese	No.	0	0	4	18	18	40
	%	0.0	0.0	10.0	45.0	45.0	25.0
Saudi & Western	No.	0	4	13	24	19	60
	%	0.0	6.6	21.6	40.0	31.7	37.5
Column Total	No.	3	8	38	64	47	160
	%	1.9	5.0	23.7	40.0	29.4	100.0

Table 9b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significancr
Complete Saudi	64.52		
Saudi & Japanese	99.17	15.9423	0.0003
Saudi & Western	84.02		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)   P < 0.05

Table 9c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	682.0	-3.8773	0.0001
Saudi & Jap. / Saudi & West.	971.0	-1.7478	0.0805
Complete Saudi / Saudi & West.	1359.0	-2.4586	0.1093

@ Statistics: The Mann-Whitney Test

Table 10a: Labour or Capital Intensive According to Factory Ownership.

Factory Ownership		Labour or Capital				
		(2) Labour	(3) Fair	(4) Capital	(5) Capital Intensive	Row Total
Complete Saudi	No.	0	13	35	12	60
	%	0.0	21.7	58.3	20.0	37.5
Saudi & Japanese	No.	13	10	10	7	40
	%	32.5	25.0	25.0	17.5	25.0
Saudi & Western	No.	0	12	28	20	60
	%	0.0	20.0	46.7	33.3	37.5
Column Total	No.	13	35	73	39	160
	%	8.2	21.8	45.6	24.4	100.0

Table 10b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	77.80		
Saudi & Japanese	64.64	11.7885	0.0028
Saudi & Western	93.77		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 10c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	991.5	-2.1277	0.0334
Saudi & Jap. / Saudi & West.	774.0	-3.2358	0.0012
Complete Saudi / Saudi & West.	1429.0	-1.6470	0.0996

@ Statistics: The Mann-Whitney Test

Table 11a: The Extent to Which Management Treats Managers as a Family According to Factory Ownership.

Factory Ownership		Treatment of Managers					
		(1) Poor	(2) Fair	(3) Good	(4) Very Good	(5) Excellent	Row Total
Complete Saudi	No.	2	11	24	20	3	60
	%	3.3	18.3	40.0	33.4	5.0	37.5
Saudi & Japanese	No.	0	1	14	19	6	40
	%	0.0	2.5	35.0	47.5	15.0	25.0
Saudi & Western	No.	3	9	27	16	5	60
	%	5	15.0	45.0	26.7	8.3	37.5
Column Total	No.	5	21	65	55	14	160
	%	3.1	13.1	40.6	34.4	8.8	100.0

Table 11b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	73.97		
Saudi & Japanese	100.60	11.2875	0.0035
Saudi & Western	73.63		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 11c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	798.5	-3.0055	0.0029
Saudi & Jap. / Saudi & West.	797.5	-3.0088	0.0026
Complete Saudi / Saudi & West.	1790.0	-0.0556	0.9557

@ **Statistics:** The Mann-Whitney Test

Table 12a: The Extent to Which Management Treats Workforce as a Family According to Factory Ownership.

Factory Ownership		Treatment of Workforce					
		(1) Poor	(2) Fair	(3) Good	(4) Very Good	(5) Excellent	Row Total
Complete Saudi	No.	3	12	36	8	1	60
	%	5.0	20.0	60.0	13.3	1.7	37.5
Saudi & Japanese	No.	0	5	13	17	5	40
	%	0.0	12.5	32.5	42.5	12.5	25.0
Saudi & Western	No.	2	19	30	7	2	60
	%	3.3	31.7	50.0	11.7	3.3	37.5
Column Total	No.	5	36	79	32	8	160
	%	3.1	22.5	49.4	20.0	5.0	100.0

Table 12b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	74.26		
Saudi & Japanese	106.84	20.4551	0.0000
Saudi & Western	69.18		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 12c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	693.5	-3.8392	0.0001
Saudi & Jap. / Saudi & West.	653.0	-4.0737	0.0000
Complete Saudi / Saudi & West.	1668.0	-0.7677	0.4427

@ Statistics: The Mann-Whitney Test

Table 13a: Relationships Between Labour and Management According to Factory Ownership.

Factory Ownership		Relationships				
		(2)	(3)	(4)	(5)	Row
		Poor	Fair	Good	Very Good	Total
Complete Saudi	No.	6	24	25	5	60
	%	10.0	40.0	41.7	8.3	37.5
Saudi & Japanese	No.	0	12	22	6	40
	%	0.0	30.0	55.0	15.0	25.0
Saudi & Western	No.	5	29	23	3	60
	%	8.3	48.4	38.3	5.0	37.5
Column Total	No.	11	65	70	14	160
	%	6.8	40.6	43.8	8.8	100.0

Table 13b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	74.85		
Saudi & Japanese	92.90	6.0032	0.0287
Saudi & Western	70.88		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 13c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	974.0	-2.2454	0.0213
Saudi & Jap. / Saudi & West.	866.0	-2.5637	0.0104
Complete Saudi / Saudi & West.	1557.0	-1.3843	0.1663

@ Statistics: The Mann-Whitney Test

Table 14a: Extent of Customer Involvement in Determining Quality of Product According to Factory Ownership.

Factory Ownership		Customer Involvement					
		(1) Not Involved	(2) Little	(3) Fair	(4) Good	(5) Fully Involved	Row Total
Complete Saudi	No.	4	17	24	10	5	60
	%	6.6	28.3	40.0	16.6	8.4	37.5
Saudi & Japanese	No.	0	2	8	20	10	40
	%	0.0	5.0	20.0	50.0	25.0	25.0
Saudi & Western	No.	3	9	26	17	5	60
	%	5.0	15.0	34.3	28.3	8.4	37.5
Column Total	No.	7	28	58	47	20	160
	%	4.4	17.5	36.3	29.3	12.5	100

Table 14b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	68.34		
Saudi & Japanese	114.31	31.0891	0.0000
Saudi & Western	70.12		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonpara-metric Statistics)   P < 0.05

Table 14c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	531.0	-4.8825	0.0000
Saudi & Jap. / Saudi & West.	516.0	-5.0350	0.0000
Complete Saudi / Saudi & West.	1739.0	-0.3357	0.7371

@ **Statistics:** The Mann-Whitney Test

Table 15a: Suppliers' Contribution to Improvement of Product Quality According to Factory Ownership.

Factory Ownership		Suppliers Contribution					
		(1) Very Harmful	(2) Harmful	(3) Fair	(4) Helpful	(5) Very Helpful	Row Total
Complete Saudi	No.	0	10	24	21	5	60
	%	0.0	16.7	40.0	35.5	8.3	37.5
Saudi & Japanese	No.	0	3	7	24	6	40
	%	0.0	7.5	17.5	60.0	15.0	25.0
Saudi & Western	No.	1	5	24	25	5	60
	%	1.7	8.3	40.0	41.6	8.3	37.5
Column Total	No.	1	18	55	70	16	160
	%	0.6	11.3	34.4	43.7	10.0	100.0

Table 15b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	65.66		
Saudi & Japanese	88.19	5.8911	0.0360
Saudi & Western	72.70		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 15c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	869.0	-2.4584	0.0140
Saudi & Jap. / Saudi & West.	937.0	-1. 9674	0.0491
Complete Saudi / Saudi & West.	1669.5	-0. 7315	0.4645

@ **Statistics:** The Mann-Whitney Test

Table 16a: Competition Criteria According to Factory Ownership.

Factory Ownership		Criteria		
		Price	Quality	Row Total
Complete Saudi	No.	21	38	59
	%	35.6	64.4	37.3
Saudi & Japanese	No.	10	29	39
	%	25.6	74.4	24.7
Saudi & Western	No.	24	36	60
	%	40.0	60.0	38.0
Column Total	No.	55	103	158
	%	34.8	65.2	100.0

Table 16b: Statistical Results.

Chi-Square	D.F.	Significance
2.17299	2	0.3374

@ **Statistics:** Crosstabulation; $P > 0.05$

Table 17a: The Extent to Which Quality has Contributed to the Success of the Factory According to Factory Ownership.

Factory Ownership		Quality Contribution					
		(1) No	(2) Little	(3) Fair	(4) Good	(5) Very Good	Row Total
Complete Saudi	No.	1	2	3	29	25	60
	%	1.7	3.3	5.0	48.3	41.7	37.5
Saudi & Japanese	No.	0	0	4	14	22	40
	%	0.0	0.0	10.0	35.0	55.0	25.0
Saudi & Western	No.	0	3	6	22	29	60
	%	0.0	5.0	10.0	36.7	48.3	37.5
Column Total	No.	1	5	13	65	76	160
	%	0.6	3.2	8.1	40.6	47.5	100.0

Table 17b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	72.55		
Saudi & Japanese	91.00	4.8189	0.0899
Saudi & Western	81.45		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P > 0.05$

Table 17c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	921.0	-2.2009	0.0277
Saudi & Jap. / Saudi & West.	1059.0	-1.1321	0.2576
Complete Saudi / Saudi & West.	1602.0	-1.1507	0.2499

@ **Statistics:** The Mann-Whitney Test

Table 18a: The Extent to Which it is Believed that the Management Invests in Improving Product Quality According to Factory Ownership.

Factory Ownership		Investment in Quality					
		(1)	(2)	(3)	(4)	(5)	Row
		No	Little	Fair	Good	Excellent	Total
Complete Saudi	No.	3	19	21	12	5	60
	%	5.0	31.6	35.0	20.0	8.3	37.5
Saudi & Japanese	No.	0	3	10	20	7	40
	%	0.0	7.5	25.0	50.0	17.5	25.0
Saudi & Western	No.	1	6	25	21	7	60
	%	1.7	10.0	41.7	35.0	11.6	37.5
Column Total	No.	4	28	56	53	19	160
	%	2.5	17.5	35.0	33.2	11.8	100.0

Table 18b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	71.34		
Saudi & Japanese	94.47	6.6357	0.0362
Saudi & Western	80.34		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)   P < 0.05

Table 18c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	853.0	-2.5799	0.0099
Saudi & Jap. / Saudi & West.	1597.0	-1.1182	0.2635
Complete Saudi / Saudi & West.	988.0	-1.8752	0..115

@ **Statistics:** The Mann-Whitney Test

Table 19a: Management Investment in Improving Product Quality According to Factory Ownership.

Investment			Factory Ownership											
			Complete Saudi			Saudi & Japanese			Saudi & Western			Total		
		Applic.	Not Applic.	Not Rel.	Applic.	Not Applic.	Not Rel.	Applic.	Not Applic.	Not Rel.	Applic.	Not Applic.	Not Rel.
Advanced Technology	No.	22	8	30	20	8	12	35	1	24	77	17	66
	%	36.6	13.4	50.0	50.0	20.0	30.0	58.3	1.7	40.0	48.1	10.6	41.3
Training for Employees	No.	12	14	34	24	4	12	26	4	30	62	22	76
	%	20.0	23.3	56.7	60.0	10.0	30.0	43.3	6.7	50.0	38.7	13.8	47.5
Seminar for Managers	No.	15	11	34	15	13	12	16	14	24	46	38	76
	%	25.0	18.3	56.7	37.5	32.5	30.0	26.6	23.3	40.0	28.8	23.8	47.5
Research in Marketing	No.	9	17	34	17	11	12	8	22	30	34	50	76
	%	15.0	28.3	56.7	47.5	27.5	30.0	13.3	36.7	50.0	21.2	31.3	47.5
Suppliers Development	No.	3	23	34	6	22	12	5	25	30	14	70	76
	%	5.0	38.3	56.7	15.0	55.0	30.0	8.30	41.7	50.0	8.8	43.7	47.5
Other	No.	3	23	34	1	27	12	2	28	30	6	78	76
	%	5.0	38.3	56.7	2.5	67.5	30.0	3.3	46.7	50.0	3.7	48.8	47.5

Table 19b: Statistical Results.

Investment in Quality	Chi-Square	D.F.	Significance
Advanced Technology	28.84310	4	0.0009
Training for Employees	20.75546	4	0.0004
Seminar for Managers	9.44354	4	0.0590
Research in Marketing	15.99851	4	0.0030
Suppliers Development	9.82456	4	0.0435
Other	8.43725	4	0.0768

@ Statistics: Crosstabulation

Table 20a: Factors Considered as Making an Important Contribution to Product Quality According to Factory Ownership.

Important Factors	Factory Ownership	Mean Rank	Chi-Square	Significance
Managers	Complete Saudi	91.07	10.9827	0.0041
	Saudi & Japanese	60.72		
	Saudi & Western	83.11		
Workforce	Complete Saudi	66.02	11.6418	0.0030
	Saudi & Japanese	97.00		
	Saudi & Western	83.98		
Competition	Complete Saudi	95.66	14.9377	0.0006
	Saudi & Japanese	84.32		
	Saudi & Western	64.13		
Customers	Complete Saudi	61.38	39.1991	0.0000
	Saudi & Japanese	118.60		
	Saudi & Western	74.22		
Market Research	Complete Saudi	79.82	19.2739	0.0001
	Saudi & Japanese	104.66		
	Saudi & Western	65.07		
Technology	Complete Saudi	64.19	17.1360	0.0002
	Saudi & Japanese	78.35		
	Saudi & Western	98.24		
Other	Complete Saudi	69.73	0.3779	0.8278
	Saudi & Japanese	74.04		
	Saudi & Western	73.65		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)

Table 20b: Statistical Results.

Important Factors	Factory Ownership	U	Z	P
Managers	Complete Saudi / Saudi & Jap.	370.0	-3.3776	0.0007
	Saudi & Jap. / Saudi & West.	879.0	-2.2888	0.0221
	Complete Saudi / Saudi & West.	1636.0	-0.8821	0.3777
Workforce	Complete Saudi / Saudi & Jap.	717.0	-3.4533	0.0006
	Saudi & Jap. / Saudi & West.	1022.0	-1.2706	0.2039
	Complete Saudi / Saudi & West.	1413.0	-2.0596	0.0394
Competition	Complete Saudi / Saudi & Jap.	929.0	-1.7839	0.0744
	Saudi & Jap. / Saudi & West.	916.0	-1.8963	0.0497
	Complete Saudi / Saudi & West.	1101.5	-3.7584	0.0002
Customers	Complete Saudi / Saudi & Jap.	302.5	-6.3792	0.0000
	Saudi & Jap. / Saudi & West.	573.5	-4.4538	0.0000
	Complete Saudi / Saudi & West.	1550.5	-1.3340	0.1822
Market Research	Complete Saudi / Saudi & Jap.	627.0	-2.7240	0.0064
	Saudi & Jap. / Saudi & West.	606.5	-4.3521	0.0000
	Complete Saudi / Saudi & West.	1468.0	-1.8727	0.0611
Technology	Complete Saudi / Saudi & Jap.	1025.0	-1.2718	0.2035
	Saudi & Jap. / Saudi & West.	939.0	-18817	0.0599
	Complete Saudi / Saudi & West	996.5	-4.3369	0.0000
Other	Complete Saudi / Saudi & Jap.	-	-	-
	Saudi & Jap. / Saudi & West.	-	-	-
	Complete Saudi / Saudi & West.	-	-	-

@ **Statistics:** The Mann-Whitney Test

Table 21a: Effect of Government Attitude on Product Quality According to Factory Ownership.

Factory Ownership		Government Attitude				
		(2) Harmful	(3) Fair	(4) Helpful	(5) Very Helpful	Row Total
Complete Saudi	No.	3	22	29	6	60
	%	5.0	36.7	48.3	10.0	37.5
Saudi & Japanese	No.	5	19	10	6	40
	%	12.5	47.5	25.0	15.0	25.0
Saudi & Western	No.	19	20	16	5	60
	%	31.7	33.3	26.7	8.3	37.5
Column Total	No.	27	61	55	17	160
	%	16.9	38.1	34.4	10.6	100.0

Table 21b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	93.82		
Saudi & Japanese	73.70	10.6692	0.0048
Saudi & Western	67.72		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (nonparametric Statistics) $P < 0.05$

Table 21c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	975.0	-2.1702	0.0386
Saudi & Jap. / Saudi & West.	1007.5	-1.4243	0.1544
Complete Saudi / Saudi & West.	1225.0	-3.1828	0.0015

@ **Statistics:** The Mann-Whitney Test

Table 22a: Management's Plans for Improving Product Quality Adopted by Factory Ownership.

Factory Ownership		Plans				
		Short Term	Med. Term	Long Term	No Idea	Row Total
Complete Saudi	No.	22	20	7	11	60
	%	36.0	33.3	11.7	16.6	37.5
Saudi & Japanese	No.	15	15	7	3	40
	%	37.5	37.5	17.5	7.5	25.0
Saudi & Western	No.	21	28	9	2	60
	%	35.0	46.7	15.0	3.3	37.5
Column Total	No.	58	63	23	16	160
	%	36.3	39.4	14.4	10.0	100.0

Table 22b: Statistical Results.

Chi-Square	D.F.	Significance
9.12563	6	0.1666

@ **Statistics:** Crosstabulation: P > 0.05

Table 23a: Employees' Understanding of Quality Objectives According To Factory Ownership.

Factory Ownership		Objectives Understanding		
		Yes	No	Row Total
Complete Saudi	No.	37	22	59
	%	62.7	37.3	39.1
Saudi & Japanese	No.	25	12	37
	%	67.6	32.4	24.0
Saudi & Western	No.	32	23	55
	%	58.2	41.8	36.4
Column Total	No.	94	57	151
	%	62.3	37.7	100.0

Table 23b: Statistical Results.

Chi-Square	D.F.	Significance
0.8379	2	0.6577

@ **Statistics:** Crosstabulation: P > 0.05

Table 24a: Establishment of Objectives According to Factory Ownership.

Objectives		Complete Saudi			Saudi & Japanese			Saudi & Western			Total		
		Applic	Not Applic.	Not Rel	Applic	Not Applic.	Not Rel	Applic	Not Applic.	Not Rel	Applic	Not Applic	Not Re
Given by top management without consultation	No.	1	39	20	0	25	15	2	35	23	6	91	63
	%	1.7	65.0	33.3	0.0	62.5	37.5	3.3	58.3	38.4	3.7	56.9	39.4
Given by top management with consultation of different depts.	No.	13	27	20	8	17	15	25	7	28	46	51	63
	%	21.7	45.0	33.3	20.0	42.5	37.5	41.7	11.7	46.7	28.8	31.8	39.4
Given by individual manager without consultation	No.	1	39	20	0	25	15	0.	32	28	1	96	63
	%	1.7	65.0	33.3	0.0	62.5	37.5	0.0	53.3	46.7	0.6	60.0	39.4
Given by individual manager in consultation with top managers	No.	14	26	20	0	25	15	0	29	28	17	80	63
	%	23.3	43.3	33.3	0.0	62.5	37.5	0.0	48.3	46.7	10.6	50.0	39.4
Given by individual manager in consultation with subordinates	No.	1	39	20	0	25	15	0	32	28	1	96	63
	%	1.7	65.0	33.3	0.0	62.5	37.5	0.0	53.3	46.7	0.6	60.0	39.4
Given by individual manager in full consultation	No.	10	30	20	20	5	15	15	17	28	45	52	63
	%	16.7	50.0	33.3	50.0	12.5	37.5	25.0	28.3	46.7	28.1	32.5	39.4

Table 24b: Statistical Results.

Objectives	Chi-Square	D.F.	Significance
Given by top management without consultation	6.25975	4	0.1475
Given by top management with consultation of different depts.	3.38900	4	0.0024
Given by individual manager without consultation	3.80489	4	0.4331
Given by individual manager in consultation with top managers	26.47441	4	0.0000
Given by individual manager in consultation with subordinates	3.80489	4	0.4331
Given by individual manager in full consultation	12.84751	4	0.0120

@ Statistics: Crosstabulation

Table 25a: Sources of Information for Establishing Objectives According to Factory Ownership.

Sources of Information		Factory Ownership						Total	
		Complete Saudi		Saudi & Japanese		Saudi & Western			
		Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.
Factory Policy Manual	No.	10	50	9	31	33	27	52	108
	%	16.7	83.3	22.5	77.5	55.0	45.0	32.5	67.5
Discussion With Employees	No.	30	30	23	17	21	39	74	86
	%	50.0	50.0	57.5	42.5	35.0	65.0	46.2	53.8
Employees Feelings as working in Groups	No.	18	42	22	18	6	54	46	114
	%	30.0	70.0	55.0	45.0	10.0	90.0	28.8	71.2
Unwritten Policy Emphasized by Top management	No.	27	33	25	15	11	49	53	107
	%	45.0	55.0	62.5	37.5	18.3	81.7	33.1	66.9
Other	No.	2	58	4	36	4	56	10	150
	%	3.3	96.7	10.0	90.0	6.6	93.4	6.2	90.6

298

Table 25b: Statistical Results.

Sources of Information	Chi-Square	D.F.	Significance
Factory Policy Manual	22.5261	2	0.0000
Discussion With Employees	5.4305	2	0.0362
Employees Feelings as working in Groups	23.7986	2	0.0000
Unwritten Policy Emphasized by Top management	10.0911	2	0.0064
Other	3.7056	2	0.0781

@ Statistics: Crosstabulation

Table 26a: Top Management Involvement in Planning For Product Quality Improvement According to Factory Ownership.

Factory Ownership		Top Management Involvement					
		(1) Not Involved	(2) Little Involved	(3) Fair	(4) Good	(5) Fully Involved	Row Total
Complete Saudi	No.	1	14	21	19	5	60
	%	1.7	23.3	35.0	31.6	8.3	37.5
Saudi & Japanese	No.	0	1	8	21	10	40
	%	0.0	2.5	20.0	52.5	25.0	25.0
Saudi & Western	No.	1	6	17	25	11	60
	%	1.7	10.0	28.4	41.7	18.4	37.5
Column Total	No.	2	21	46	65	26	160
	%	1.2	13.2	28.8	40.6	16.3	100.0

Table 26b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	69.53		
Saudi & Japanese	90.99	6.6652	0.0035
Saudi & Western	84.47		

© **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)   P < 0.05

Table 26c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	872.0	-2.4866	0.0129
Saudi & Jap. / Saudi & West.	1108.0	-0.6870	0.4921
Complete Saudi / Saudi & West.	967.0	-2.0715	0.0383

© **Statistics:** The Mann-Whitney Test

Table 27a: Measures to Implement Product Quality Adopted by Factory Ownership.

Measures		Complete Saudi		Saudi & Japanese		Saudi & Western		Total	
		Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.
Internal Seminar	No.	17	43	14	26	4	56	35	125
for Managers	%	28.3	71.7	35.0	65.0	6.7	93.3	21.9	78.1
Seminar by Professional	No.	50	10	32	7	57	3	139	20
for Managers	%	83.3	16.7	82.1	17.9	95.0	5.0	87.4	12.6
Internal Training	No.	36	24	30	10	27	33	93	67
for Employees	%	60.0	40.0	75.0	25.0	45.0	55.0	58.1	41.9
Training Managers	No.	18	42	17	23	25	35	60	100
Abroad	%	30.0	70.0	42.5	57.5	41.7	58.3	37.5	62.5
Training Employees	No.	12	48	19	21	55	5	86	74
Abroad	%	20.0	80.0	47.5	52.5	91.7	8.3	53.8	46.2

Table 27b: Statistical Results.

Measures	Chi-Square	D.F.	Significance
Internal Seminar for Managers	13.6167	2	0.0011
Seminar by Professional for Managers	5.06851	2	0.0793
Internal Training for Employees	9.01300	2	0.0110
Training Managers Abroad	2.31111	2	0.3149
Training Employees Abroad	21.45759	2	0.0000

@ **Statistics: Crosstabulation**

Table 28a: Top Management Committment to Product Quality Improvement According to Factory Ownership.

Factory Ownership		Top Management Committment					
		(1) No	(2) Little	(3) Fair	(4) Good	(5) Very Good	Row Total
Complete Saudi	No.	0	4	20	25	11	60
	%	0.0	6.7	33.3	41.7	18.3	37.5
Saudi & Japanese	No.	0	1	6	22	11	40
	%	0.0	2.5	15.0	55.0	27.5	25.0
Saudi & Western	No.	2	4	13	28	13	60
	%	3.3	6.7	21.7	46.7	21.7	37.5
Column Total	No.	2	9	39	75	35	160
	%	1.2	5.6	24.4	46.9	21.9	100.0

Table 28b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	71.68		
Saudi & Japanese	98.32	9.7019	0.0078
Saudi & Western	77.43		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 28c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	791.5	-3.1163	0.0018
Saudi & Jap. / Saudi & West.	895.5	-2.3496	0.0188
Complete Saudi / Saudi & West.	1679.5	-0.6724	0.5013

@ **Statistics:** The Mann-Whitney Test

Table 29a: Decision-Making Style According to Factory Ownership.

Decision-Making Style Based on		Factory Ownership			
		Complete Saudi	Saudi & Japanese	Saudi & Western	Row Total
Factory Rules Without	No.	10	0	8	18
Consulting Other	%	16.6	0.0	13.3	11.3
Their Experiences With-	No.	11	2	8	21
out Consulting Other	%	18.3	5.0	13.3	13.1
Consulting Their Subor-	No.	12	6	8	26
dinates in the Same Dept.	%	20.0	15.0	13.3	16.2
Consulting Their Coll-	No.	15	10	17	42
eaques in Other Dept.	%	25.0	25.0	28.3	26.3
Consulting Both Sub-	No.	12	22	19	53
ordinate & Colleaques	%	20.0	55.0	31.6	33.1
Column Total	No.	60	40	60	160
	%	37.5	25	37.5	100.0

Table 29b: Statistical Results.

Chi-Square	D.F.	Significance
34.43848	8	0.0009

@ Statistics: Crosstabulation;   P < 0.05

Table 30a: Involvement of Other Departments in Decision-Making Concerning Quality According to Factory Ownership.

Factory Ownership		Involvement of Other Dept.				
		(4) Often	(3) Sometimes	(2) Rarely	(1) Never	Row Total
Complete Saudi	No.	12	32	12	4	60
	%	20.0	53.7	20.0	6.7	37.5
Saudi & Japanese	No.	15	16	8	1	40
	%	37.5	40.0	20.0	2.6	25.0
Saudi & Western	No.	18	29	13	0	60
	%	30.0	48.3	21.7	0.0	37.5
Column Total	No.	45	77	33	5	160
	%	28.1	48.1	20.7	3.1	100.0

Table 30b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	72.38		
Saudi & Japanese	92.60	7.8702	0.0019
Saudi & Western	84.49		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 30c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	934.0	-2.6765	0.0074
Saudi & Jap. / Saudi & West.	1338.0	-0.9390	0.8464
Complete Saudi / Saudi & West.	1174.0	-2.0430	0.0410

@ Statistics: The Mann-Whitney Test

Table 31a: Time Spent in Decision-Making Procedure Concerning Product Quality According to Factory Ownership.

Factory Ownership		Time Spent in Decision-Making			
		(1) Short	(2) Reasonable	(3) Long	Row Total
Complete Saudi	No.	15	11	27	57
	%	28.3	20,8	50.9	39.0
Saudi & Japanese	No.	3	9	24	36
	%	8.7	25.0	66.7	24.7
Saudi & Western	No.	23	10	24	53
	%	40.4	17.5	38	36.3
Column Total	No.	41	30	75	146
	%	28.1	20.5	51.4	100.0

Table 31b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	76.57		
Saudi & Japanese	95.04	9.0747	0.0017
Saudi & Western	68.74		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 31c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	1495.0	-1.7011	0.1677
Saudi & Jap. / Saudi & West.	1119.0	-2.2795	0.0480
Complete Saudi / Saudi & West.	779.5	-3.0303	0.0024

@ Statistics: The Mann-Whitney Test

Table 32a: Time Spent in Decisions Implementation Concerning Product Quality According to Factory Ownership.

Factory Ownership		Time Spent in Decision Implementation			
		(1) Short	(2) Reasonable	(3) Long	Row Total
Complete Saudi	No.	3	13	44	60
	%	5.0	22.8	77.3	37.5
Saudi & Japanese	No.	5	23	12	40
	%	12.0	57.5	30	25.0
Saudi & Western	No.	7	18	35	60
	%	11.6	30.0	58.3	37.5
Column Total	No.	15	54	91	160
	%	9.3	33.8	56.9	100.0

Table 32b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	89.70		
Saudi & Japanese	66.70	16.1565	0.0007
Saudi & Western	79.62		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 32c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	631.0	-4.5401	0.0000
Saudi & Jap. / Saudi & West.	768.0	-3.3426	0.0008
Complete Saudi / Saudi & West.	1541.0	-1.6280	0.1035

@ **Statistics:** The Mann-Whitney Test

Table 33a: Structure of Factories According to Factory Ownership.

Factory Ownership		Structure of Factories		
		Formal	Informal	Row Total
Complete Saudi	No.	39	4	43
	%	90.7	9.3	31.9
Saudi & Japanese	No.	29	7	36
	%	80.6	19.4	26.7
Saudi & Western	No.	44	12	56
	%	78.6	21.4	41.4
Column Total	No.	112	23	135
	%	82.9	17.1	100.0

Table 33b: Statistical Results.

Chi-Square	D.F.	Significance
2.7317	2	0.2552

© Statistics: Crosstabulation; P > 0.05

Table 34a: Number of Departments According to

Factory Ownership.

Factory Ownership		Number of Departments			
		Few	Reasonable	Many	Row Total
Complete Saudi	No.	17	30	13	60
	%	28.3	50.0	21.7	37.5
Saudi & Japanese	No.	2	34	4	40
	%	5.0	85.0	10.0	25.0
Saudi & Western	No.	0	29	31	60
	%	0.0	48.3	51.7	37.5
Column Total	No.	19	93	48	160
	%	11.9	58.1	30.0	100.0

Table 34b: Statistical Results.

Chi-Square	D.F.	Significance
45.1569	4	0.0000

@ Statistics: Crosstabulation; $P < 0.05$

307

Table 35a: Interaction Between Departments According to Factory Ownership.

Factory Ownership		Interaction Between Departments		
		Co-op.	Very Co-op.	Row Total
Complete Saudi	No.	26	34	60
	%	43.3	56.7	37.5
Saudi & Japanese	No.	21	19	40
	%	52.5	47.5	25.0
Saudi & Western	No.	40	20	60
	%	66.7	33.3	37.5
Column Total	No.	87	73	160
	%	54.4	45.6	100.0

Table 35b: Statistical Results.

Chi-Square	D.F.	Significance
6.6593	2	0.0358

@ **Statistics:** Crosstabulation;   P < 0.05

Table 36a: Occurrence of Discussion of Objectives According to Factory Ownership.

Factory Ownership		Discussion of Objectives		
		Yes	No	Row Total
Complete Saudi	No.	53	7	60
	%	88.3	11.7	37.5
Saudi & Japanese	No.	39	1	40
	%	97.5	2.5	25.0
Saudi & Western	No.	57	3	60
	%	95.0	5.0	37.5
Column Total	No.	149	11	160
	%	93.1	6.9	100.0

Table 36b: Statistical Results.

Chi-Square	D.F.	Significance
3.67704	2	0.1591

○ **Statistics:** Crosstabulation; $P > 0.05$

Table 37a: Discussion of Objectives With Other Employees According to Factory Ownership.

Factory Ownership		Discussion of Objectives With Other Employees			
		Same Dept.	Diff. Dept.	Relevant Dept.	Row Total
Complete Saudi	No.	6	39	8	53
	%	11.3	73.6	15.1	36.3
Saudi & Japanese	No.	7	19	11	37
	%	18.9	51.4	29.7	25.3
Saudi & Western	No.	9	30	17	56
	%	16.1	53.6	30.4	38.9
Column Total	No.	22	88	36	146
	%	15.6	60.2	24.7	100.0

Table 37b: Statistical Results.

Chi-Square	D.F.	Significance
6.4491	4	0.1680

@ Statistics: Crosstabulation;   P > 0.05

Table 38a: Reasons for Discusing Objectives With Other Employees According to Factory Ownership.

Reasons for Discusing Obj.		Factory Ownership			
		Complete Saudi	Saudi & Japanese	Saudi & Western	Row Total
Concern About	No.	6	11	26	43
Your dept.	%	11.5	28.2	50.0	30.1
Concern About	No.	46	28	26	100
the Whole Factory	%	88.5	71.8	50.0	69.6
Column Total	No.	52	39	52	143
	%	36.3	27.4	36.3	100.0

. Table 38b: Statistical Results.

Chi-Square	D.F.	Significance
13.8020	2	0.0010

@ **Statistics:** Crosstabulation; $P < 0.05$

Table 39a: Reasons for not Discusing Objectives With Other Employees According to Factory Ownership.

Reasons for not discusing Objectives		Factory Ownership			
		Complete Saudi	Saudi & Japanese	Saudi & Western	Row Total
Employees are not Interested in Discusing Managers Obj.	No.	2	0	0	2
	%	3.3	0.0	0.0	1.3
Not All Employees Aware of Factory Objectives	No.	5	0	3	6
	%	8.3	0.0	5.0	5.0
Conflict Between Objectives	No.	0	1	0	1
	%	0.0	2.5	0.0	0.6
Not Relevant	No.	53	39	57	149
	%	88.3	97.5	95.0	93.1
Column Total	No.	60	40	60	160
	%	37.5	25.0	37.5	100.0

Table 39b: Statistical Results.

Chi-Square	D.F.	Significance
9.9194	6	0.1281

© **Statistics: Crosstabulation;** $P > 0.05$

Table 40a: Introduction of Modification to Original Plan According to Factory Ownership.

Factory Ownership		Modification			
		(4) Often	(3) Sometimes	(2) Rarely	Row Total
Complete Saudi	No.	10	31	19	60
	%	16.6	51.7	31.7	37.5
Saudi & Japanese	No.	2	28	10	40
	%	5.0	70.0	25.0	25.0
Saudi & Western	No.	8	40	12	60
	%	13.3	66.7	20.0	37.5
Column Total	No.	20	99	41	160
	%	12.5	61.9	25.6	100.0

Table 40b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	82.07		
Saudi & Japanese	84.40	1.1338	0.5673
Saudi & Western	76.31		

⊙ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (nonparametric Statistics) $P > 0.05$

Table 41a: Implementation of Modification to Original Plan According to Factory Ownership.

Factory Ownership	No. %	Implementation of Modification					
		Top Man-agment	All Emp-loyees	Affected Managers	Trust Wor-thy Managers	Consul. Prof. People	Row Total
Complete Saudi	No.	20	6	17	13	4	60
	%	33.3	10.0	28.3	21.7	6.7	37.5
Saudi & Japanese	No.	2	23	21	1	2	40
	%	5.0	57.5	30.0	2.5	5.0	25.0
Saudi & Western	No.	10	12	30	1	7	60
	%	16.6	20.0	50.0	1.7	11.3	37.5
Column Total	No.	32	41	59	15	13	160
	%	20.0	25.6	36.9	9.4	8.1	100.0

Table 41b: Statistical Results.

Chi-Square	D.F.	Significance
25.18122	8	0.0001

@ **Statistics:** Crosstabulation; $P < 0.05$

Table 42a: Attitude of Managers Towards Modifications According to Factory Ownership.

Factory Ownership		Delegating Authority & Responsibility		
		(2) Some Resistance	(3) Acceptance	Row Total
Complete Saudi	No.	41	19	60
	%	68.3	31.7	37.5
Saudi & Japanese	No.	15	25	40
	%	37.5	62.0	25.0
Saudi & Western	No.	33	27	60
	%	55.0	45.0	37.5
Column Total	No.	89	71	160
	%	55.6	44.4	100.0

Table 42b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	70.22		
Saudi & Japanese	95.75	9.5575	0.0084
Saudi & Western	80.62		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 42c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	815.0	-3.1129	0.0019
Saudi & Jap. / Saudi & West.	975.0	-1.8134	0.0498
Complete Saudi / Saudi & West.	1568.0	-1.4106	0.1584

@ Statistics: The Mann-Whitney Test

Table 43a: Attitude of Workforce Towards Modifications According to Factory Ownership.

Factory Ownership		Delegating Authority & Responsibility		
		(2)	(3)	Row
		Some Resistance	Acceptance	Total
Complete Saudi	No.	43	17	60
	%	71.7	28.3	37.5
Saudi & Japanese	No.	19	21	40
	%	47.5	52.5	25.0
Saudi & Western	No.	41	19	60
	%	68.3	31.7	37.5
Column Total	No.	103	57	160
	%	64.4	35.6	100.0

Table 43b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	72.74		
Saudi & Japanese	96.14	8.5623	0.0138
Saudi & Western	77.83		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)   P < 0.05

Table 43c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	853.0	-2.7835	0.0054
Saudi & Jap. / Saudi & West.	921.0	-2.2614	0.0237
Complete Saudi / Saudi & West.	1681.5	-0.7287	0.4662

@ Statistics: The Mann-Whitney Test

Table 44a: Understandig of Authority and Responsibility Terms as Individual According to Factory Ownership.

Factory Ownership		Delegating Authority & Responsibility			
		(4) Extremely Clear	(3) Sligtly Clear	(2) Ambigous	Row Total
Complete Saudi	No.	26	29	5	60
	%	43.3	48.3	8.3	37.5
Saudi & Japanese	No.	14	24	2	40
	%	35.0	60.0	5.0	25.0
Saudi & Western	No.	29	26	5	60
	%	48.4	43.3	8.3	37.5
Column Total	No.	69	79	12	160
	%	43.1	49.4	7.5	100.0

Table 44b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	80.72		
Saudi & Japanese	77.02	0.9784	0.6131
Saudi & Western	85.38		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance

$P > 0.05$

Table 45a: Understandig of Authority and Responsibility Terms as Groups According to Factory Ownership.

Factory Ownership		Delegating Authority & Responsibility				
		(4) Extremely Clear	(3) Sligtly Cleare	(2) Ambi-gous	(1) Extremely Unclear	Row Total
Complete Saudi	No.	16	25	8	11	60
	%	26.7	41.7	13.3	18.3	37.5
Saudi & Japanese	No.	22	16	1	1	40
	%	55.0	40.0	2.5	2.5	25.0
Saudi & Western	No.	21	22	15	2	60
	%	35.0	36.7	25.0	3.3	37.5
Column Total	No.	59	63	24	14	160
	%	36.9	39.4	15.0	8.8	100.0

Table 45b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	50.97		
Saudi & Japanese	90.72	12.6865	0.0018
Saudi & Western	83.96		

© Statistics: The Kruskal-Wallis One-Way Analysis of Variance   P <0.05

Table 45c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	733.0	-3.5288	0.0004
Saudi & Jap. / Saudi & West.	1653.5	-0.8180	0.4134
Complete Saudi / Saudi & West.	864.0	-2.6876	0.0072

© Statistics: The Mann-Whitney Test

Table 46a: The Extent of Delegating Authority and Responsibility to Improve Product Quality According to Factory Ownership.

Factory Ownership		Delegating Authority & Responsibility				
		(1) No	(2) Little	(3) Good	(4) Excellent	Row Total
Complete Saudi	No.	0	35	23	2	60
	%	0.0	58.4	38.3	3.3	37.5
Saudi & Japanese	No.	1	5	26	8	40
	%	2.5	12.5	65.0	20.0	25.0
Saudi & Western	No.	4	23	27	6	60
	%	6.7	38.3	45.0	10.0	37.5
Column Total	No.	5	63	76	16	160
	%	3.1	39.4	47.5	10.0	100.0

Table 46b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	68.22		
Saudi & Japanese	101.30	14.9736	0.0006
Saudi & Western	78.92		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 46c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	712.0	3.7822	0.0002
Saudi & Jap. / Saudi & West.	856.0	2.1286	0.0086
Complete Saudi / Saudi & West.	1551.0	1.4761	0.1399

@ **Statistics:** The Mann-Whitney Test

Table 47a: Reasons for Not Delegating Authority and Responsibility According to Factory Ownership.

Reasons for Not Delegating		Factory Ownership			
		Complete Saudi	Saudi & Japanese	Saudi & Western	Row Total
Top mangement does not want to relinquish control	No.	5	2	37	44
	%	8.3	5.0	68.5	36.9
Top management does not have confidence in employees	No.	44	3	13	60
	%	73.3	7.5	24.1	50.4
Top management does not have trust in employees	No.	10	0	1	11
	%	16.7	0.0	1.9	9.3
Employees not interested in accepting responsibility and authority	No.	1	0	3	4
	%	1.7	0.0	5.6	3.4
Column Total	No.	60	5	54	119
	%	50.5	4.2	45.3	100.0

Table 47b: Statistical Results.

Chi-Square	D.F.	Significance
93.9456	6	0.0000

@ Statistics: Crosstabulation; P < 0.05

Table 48a: Form of Communication According to Factory Ownership.

Factory Ownership		Form of Communication		
		Formal	Informal	Row Total
Complete Saudi	No.	43	17	60
	%	71.7	28.3	37.5
Saudi & Japanese	No.	28	12	40
	%	70.0	30.0	25.0
Saudi & Western	No.	37	23	60
	%	61.7	38.3	37.5
Column Total	No.	108	52	160
	%	67.5	32.5	100.0

Table 48b: Statistical Results.

Chi-Square	D.F.	Significance
1.51947	2	0.4678

⊚ **Statistics: Crosstabulation;**   P > 0.05

Table 49a: Means of Communication Applied According to Factory Ownership.

Means of Communication	Factory Ownership	Mean Rank	Chi-Square	Significance
Discussion in Coffee Room	Complete Saudi	67.27	13.7569	0.0010
	Saudi & Japanese	75.95		
	Saudi & Western	95.69		
Regular Meeting	Complete Saudi	91.00	6.8538	0.0325
	Saudi & Japanese	78.01		
	Saudi & Western	70.16		
Morning Meetig	Complete Saudi	61.40	26.9731	0.0000
	Saudi & Japanese	108.84		
	Saudi & Western	80.71		
Telephone Calls	Complete Saudi	100.05	24.3546	0.0000
	Saudi & Japanese	83.25		
	Saudi & Western	59.12		
Personal Visit at Office	Complete Saudi	87.83	4.7015	0.0953
	Saudi & Japanese	83.04		
	Saudi & Western	70.27		
Mail	Complete Saudi	70.89	20.4249	0.0000
	Saudi & Japanese	63.71		
	Saudi & Western	101.36		
Other	Complete Saudi	85.87	1.7354	0.4199
	Saudi & Japanese	77.38		
	Saudi & Western	75.97		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)

Table 49b: Statistical Results.

Means of Communication	Factory Ownership	U	Z	P
Discussion in Coffee Room	Complete Saudi / Saudi & Jap.	1053.0	-1.1740	0.2404
	Saudi & Jap. / Saudi & West.	871.0	-2.3173	0.0205
	Complete Saudi / Saudi & West.	1153.0	-3.5394	0.0004
REgular Meeting	Complete Saudi / Saudi & Jap.	994.0	-1.4967	0.1345
	Saudi & Jap. / Saudi & West.	1054.0	-0.9703	0.3319
	Complete Saudi / Saudi & West.	1315.0	-2.5400	0.0111
Morning Meeting	Complete Saudi / Saudi & Jap.	509.0	-5.0563	0.0000
	Saudi & Jap. / Saudi & West.	757.5	-3.1566	0.0016
	Complete Saudi / Saudi & West.	1345.0	-2.5508	0.0107
Telephone Calls	Complete Saudi / Saudi & Jap.	928.0	-1.9490	0.0513
	Saudi & Jap. / Saudi & West.	818.0	-2.7427	0.0061
	Complete Saudi / Saudi & West.	899.0	-4.8031	0.0000
Personal Visit at Office	Complete Saudi / Saudi & Jap.	-	-	-
	Saudi & Jap. / Saudi & West.	-	-	-
	Complete Saudi / Saudi & West.	-	-	-
Mail	Complete Saudi / Saudi & Jap.	1078.0	-0.8826	0.3775
	Saudi & Jap. / Saudi & West.	650.0	-3.8900	0.0001
	Complete Saudi / Saudi & West.	1101.0	-3.7224	0.0002
Other	Complete Saudi / Saudi & Jap.	-	-	-
	Saudi & Jap. / Saudi & West.	-	-	-
	Complete Saudi / Saudi & West.	-	-	-

@ **Statistics:** The Mann-Whitney Test

Table 50a: Reasons for Contact During Work Time According to Factory Ownership.

Reasons for Contact During Work Time		Factory Ownership							
		Complete Saudi		Saudi & Japanese		Saudi & Western		Total	
		Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.
Daily Routine	No.	43	17	9	31	26	34	78	82
	%	71.7	28.3	22.5	77.5	43.3	56.7	48.8	51.2
Coordination of Employees	No.	25	35	28	12	38	22	91	69
	%	41.7	58.3	70.0	30.0	63.3	36.7	56.9	43.1
Response to Problems	No.	47	13	26	14	47	13	120	40
	%	78.3	21.7	65.0	35.0	78.3	21.7	75.0	25.0
Emphasizing Team Work	No.	17	43	30	10	29	31	76	84
	%	28.3	71.7	75.0	25.0	48.3	51.7	47.5	52.5
Emphasizing Main Objectives	No.	12	48	13	27	23	37	48	112
	%	20.0	80.0	32.5	67.5	38.3	61.7	30.0	70.0
Having social talk	No.	8	52	8	32	20	40	36	124
	%	13.3	66.7	20.0	80.0	33.3	66.7	22.5	77.5

Table 50b: Statistical Results.

Reasons for Contact at Work Time	Chi-Square	D.F.	Significance
Daily Routine	24.34855	2	0.0000
Coordination of Employees	9.48771	2	0.0087
Response to Problems	2.84444	2	0.2412
Emphasizing Team Work	20.98580	2	0.0000
Emphasizing Main Objectives	4.96032	2	0.0837
Having asocial talk	10.54378	2	0.2322

@ Statistics: Crosstabulation

324

Table 51a: Form of Employees Motivation According to Factory Ownership.

Factory Ownership		Employees Motivation		
		Individual	Group	Row Total
Complete Saudi	No.	39	21	60
	%	65.0	35.0	37.5
Saudi & Japanese	No.	14	26	40
	%	35.0	65.0	25.0
Saudi & Western	No.	40	20	60
	%	66.7	33.3	37.5
Column Total	No.	93	67	160
	%	58.1	41.9	100.0

Table 51b: Statistical Results.

Chi-Square	D.F.	Significance
10.8985	2	0.0043

@ **Statistics: Crosstabulation;**   P < 0.05

325

Table 52a: Motivation Applied According to Factory Ownership.

Motivation Applied		Factory Ownership											
		Complete	Saudi			Saudi	& Japanese			Saudi	& Western		
		(1) Not Imp.	(2) Slightly Imp.	(3) Imp.	(4) Extr. Imp.	(1) Not Imp.	(2) Slightly Imp.	(3) Imp.	(4) Extr. Imp.	(1) Not Imp.	(2) Slightly Imp.	(3) Imp.	(4) Extr. Imp.
Cash Recieved	No.	10	14	25	10	5	16	16	3	3	10	27	20
	%	16.6	23.3	41.7	16.7	12.5	40.0	40.0	7.5	5.0	16.6	45.0	33.3
Encouraging Team Work	No.	1	4	30	25	0	0	12	28	0	8	33	19
	%	1.7	6.7	50.0	41.6	0.0	0.0	30.0	70.0	0.0	13.3	55.0	31.7
Encouraging Employees' Involvement	No.	0	15	20	25	0	0	14	26	0	5	33	22
	%	0.0	25.7	33.3	41.7	0.0	0.0	35.0	65.0	0.0	8.3	55.0	36.7
Providing Special Recognition	No.	2	3	18	37	0	11	14	15	1	8	22	29
	%	3.3	5.0	30.0	61.7	0.0	27.5	35.0	37.5	1.7	13.3	36.7	48.3
Providing More training Programmes	No.	0	5	38	17	1	7	23	9	0	7	41	12
	%	0.0	8.3	63.3	28.4	2.5	17.5	57.5	22.5	0.0	11.7	68.3	20.0
Providing Lifetime Employment	No.	13	29	18	0	6	21	10	3	17	24	14	5
	%	21.7	48.3	30.0	0.0	15.0	52.5	25.0	7.5	28.3	40.0	23.3	8.4
Providing Quick Promotion	No.	0	21	32	7	3	26	10	1	13	20	23	4
	%	0.0	35.0	53.3	11.7	7.5	65.0	25.0	2.5	21.7	33.3	38.3	6.7
Delegating More Authority	No.	0	4	19	37	1	8	21	10	6	8	25	21
	%	0.0	6.7	31.7	61.6	2.5	20.0	52.5	25.0	10.0	13.3	41.7	35.0
Providing Good Compensation in Case of Retirement	No.	5	16	30	9	9	14	10	7	9	24	19	8
	%	8.3	26.7	50.0	15.0	22.5	35.0	25.0	17.5	15.0	40.0	31.7	13.3
Providing Social Service for Empl. Family	No.	8	15	33	4	6	23	9	2	14	25	18	3
	%	13.3	25.0	55.0	6.7	15.0	57.5	22.5	5.0	23.3	41.7	30.0	5.0
Providing Social Activities for Employees at Weekend	No.	9	36	12	3	10	20	8	2	32	20	7	1
	%	15.0	60.0	20.0	5.0	25.0	50.0	20.0	5.0	53.3	33.3	11.7	1.7

Table 52b: Statistical Results.

Motivation Applied	Factory Ownership	Mean Rank	Chi-Square	Significance
Cash Recieved	Complete Saudi	74.46		
	Saudi & Japanese	61.76	10.1077	0.0064
	Saudi & Western	89.03		
Encouraging Team Work	Complete Saudi	75.56		
	Saudi & Japanese	97.45	16.9785	0.0002
	Saudi & Western	64.14		
Encouraging Employees' Involvement	Complete Saudi	75.76		
	Saudi & Japanese	98.10	9.6885	0.0079
	Saudi & Western	73.51		
Providing Special Recognition	Complete Saudi	90.54		
	Saudi & Japanese	67.36	7.3326	0.0256
	Saudi & Western	79.22		
Providing More training Programmes	Complete Saudi	86.29		
	Saudi & Japanese	74.90	2.2598	0.3231
	Saudi & Western	78.44		
Providing Lifetime Employment	Complete Saudi	81.94		
	Saudi & Japanese	77.66	0.2484	0.8832
	Saudi & Western	80.95		
Providing Quick Promotion	Complete Saudi	97.39		
	Saudi & Japanese	66.00	15.5590	0.0004
	Saudi & Western	73.27		
Delegating More Authority	Complete Saudi	98.17		
	Saudi & Japanese	66.72	16.7212	0.0002
	Saudi & Western	72.01		
Providing Good Comp- ensation in Case of Retirement	Complete Saudi	90.24		
	Saudi & Japanese	79.30	4.7706	0.0921
	Saudi & Western	82.66		
Providing Social Ser- vice for Empl. Family	Complete Saudi	76.63		
	Saudi & Japanese	82.90	0.7796	0.6772
	Saudi & Western	81.77		
Providing Social Act- ivities for Employees at Weekend	Complete Saudi	84.47		
	Saudi & Japanese	78.52	0.8532	0.6527
	Saudi & Western	77.84		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)

Table 52c: Statistical Results.

Motivation Applied	Factory Ownership	U	Z	P
Cash Recieved	Complete Saudi / Saudi & Jap.	1786.0	-0.5464	0.5848
	Saudi & Jap. / Saudi & West.	864.5	-3.0917	0.0020
	Complete Saudi / Saudi & West	1702.0	-2.4934	0.0127
Encouraging Team Work	Complete Saudi / Saudi & Jap.	1030.0	-2.7415	0.0061
	Saudi & Jap. / Saudi & West.	692.0	-3.9847	0.0001
	Complete Saudi / Saudi & West	1326.0	-1.4124	0.1578
Encouraging Employees' Involvement	Complete Saudi / Saudi & Jap.	871.0	-2.5995	0.0093
	Saudi & Jap. / Saudi & West.	825.0	-2.9770	0.0029
	Complete Saudi / Saudi & West	1755.0	-0.2599	0.7949
Providing Special Recognition	Complete Saudi / Saudi & Jap.	857.0	-2.6587	0.0078
	Saudi & Jap. / Saudi & West.	1017.5	-1.3835	0.1665
	Complete Saudi / Saudi & West	1540.5	-1.5267	0.1268
Providing Quick Promotion	Complete Saudi / Saudi & Jap.	699.5	-3.8850	0.0001
	Saudi & Jap. / Saudi & West.	1120.5	-0.6023	0.5470
	Complete Saudi / Saudi & West	1287.0	-2.9003	0.0037
Delegating More Authority	Complete Saudi / Saudi & Jap.	714.0	-3.7483	0.0002
	Saudi & Jap. / Saudi & West.	1134.5	-0.4945	0.6209
	Complete Saudi / Saudi & West	1225.0	-3.2993	0.0010

@ Statistics: The Mann-Whitney Test

Table 53a: Investment in Employees Development According to Factory Ownership.

Factory Ownership		Investment in Employees					
		(1) No	(2) Little	(3) Fair	(4) Good	(5) Ex4ellent	Row Total
Complete Saudi	No.	4	13	26	16	1	60
	%	6.7	21.7	43.2	26.7	1.7	37.5
Saudi & Japanese	No.	0	8	11	17	4	40
	%	0.0	20.0	27.5	42.5	10.0	25.0
Saudi & Western	No.	4	14	19	18	5	60
	%	6.7	23.6	31.6	30.0	8.3	37.5
Column Total	No.	8	35	56	51	10	160
	%	5.0	21.9	35.0	31.9	6.2	100.0

Table 53b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	63.77		
Saudi & Japanese	96.10	14.8208	0.0006
Saudi & Western	76.83		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 53c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	696.5	-3.7437	0.0002
Saudi & Jap. / Saudi & West.	1079.0	-2.7471	0.0060
Complete Saudi / Saudi & West.	1299.5	-0.8938	0.3714

@ Statistics: The Mann-Whitney Test

Table 54a: Type of Training Provided to New Employees According to Factory Ownership.

Factory Ownership		Type of Training for New Employees		
		Specific	General	Row Total
Complete Saudi	No.	40	20	60
	%	66.7	33.3	37.5
Saudi & Japanese	No.	19	21	40
	%	47.5	52.5	25.0
Saudi & Western	No.	51	9	60
	%	85.0	15.0	37.5
Column Total	No.	110	50	160
	%	68.5	31.5	100.0

Table 54b: Statistical Results.

Chi-Square	D.F.	Significance
17.2407	2	0.0002

@ Statistics: Crosstabulation; $P < 0.05$

Table 55a: Time Spent Training New Employees According to Factory Ownership.

Factory Ownership		Training Time				
		(1) One Week	(2) One Month	(3) Six Months	(4) More	Row Total
Complete Saudi	No.	2	17	30	11	60
	%	3.3	28.3	50.0	18.5	37.5
Saudi & Japanese	No.	0	10	22	8	40
	%	0.0	25.0	55.0	20.0	25.0
Saudi & Western	No.	1	12	32	15	60
	%	1.7	20.0	53.3	25.0	37.5
Column Total	No.	3	39	84	34	160
	%	1.9	24.4	52.5	21.2	100.0

Table 55b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	72.06		
Saudi & Japanese	78.40	0.8531	0.7796
Saudi & Western	82.34		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (nonparametric Statistics) $P > 0.05$

Table 56: Maintaining Product Standard According to Factory Ownership.

Factory Ownership		Maintaining Product Standard		
		Yes	No	Row Total
Complete Saudi	No.	60	0	60
	%	100.0	0.0	37.5
Saudi & Japanese	No.	40	0	40
	%	100.0	0.0	25.0
Saudi & Western	No.	60	0	60
	%	100.0	0.0	37.5
Column Total	No.	160	0	160
	%	100.0	0.0	100.0

@ **Statistics: Crosstabulation;**

332

Table 57a: Level of Product Standard According to Factory Ownership.

Level of Product Standard		Factory Ownership						Total	
		Complete Saudi		Saudi & Japanese		Saudi & Western			
		Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.
Own Standard	No.	9	51	4	36	7	53	20	140
	%	15.0	85.0	10.0	90.0	11.7	88.3	12.5	87.5
National Standard	No.	14	46	10	30	18	42	42	118
	%	23.3	76.7	25.5	75.5	30.0	70.0	26.3	73.7
International Standard	No.	51	9	32	8	49	11	132	28
	%	85.0	15.0	80.0	20.0	81.7	18.3	82.5	17.5
Competitors' Standard	No.	20	40	10	30	12	48	42	118
	%	33.3	66.7	25.0	55.0	20.0	80.0	26.3	73.7

Table 57b: Statistical Results.

Level of Product Standard	Chi-Square	D.F.	Significance
Own Standard	12.74817	2	0.1694
National Standard	4.13682	2	0.1264
International Standard	6.40000	2	0.1755
Competitors' Standard	5.19988	2	0.0743

@ Statistics: Crosstabulation   P > 0.05

Table 58a: Application of Statistical Quality Control According to Factory Ownership.

Factory Ownership		Statistical Quality Control				
		(2)	(3)	(4)	(5)	
						Row
		Little	Fair	Good	Great Deal	Total
Complete Saudi	No.	13	30	15	2	60
	%	21.7	50.0	25.0	3.3	37.5
Saudi & Japanese	No.	4	16	16	4	40
	%	10.0	40.0	40.0	10.0	25.0
Saudi & Western	No.	9	21	22	8	60
	%	15.0	35.0	36.7	13.3	37.5
Column Total	No.	26	67	53	14	160
	%	16.3	41.8	33.1	8.8	100.0

Table 58b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	67.02		
Saudi & Japanese	87.50	5.6676	0.0420
Saudi & Western	86.32		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)   P < 0.05

Table 58c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	930.0	-2.0776	0.0377
Saudi & Jap. / Saudi & West.	1441.0	-0.0746	0.9406
Complete Saudi / Saudi & West.	1190.0	-2.0246	0.0429

@ Statistics: The Mann-Whitney Test

Table 59a: Number of Inspectors According to Factory Ownership.

Factory Ownership		Number of Inspectors		
		(2) Few	(3) Many	Row Total
Complete Saudi	No.	35	25	60
	%	58.3	41.7	37.5
Saudi & Japanese	No.	37	3	40
	%	92.5	7.5	25.0
Saudi & Western	No.	44	16	60
	%	73.3	26.7	37.5
Column Total	No.	116	44	160
	%	72.5	27.5	100.0

Table 59b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	95.05		
Saudi & Japanese	71.38	11.2589	0.0036
Saudi & Western	79.89		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 59c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	847.0	-3.2460	0.0012
Saudi & Jap. / Saudi & West.	1606.0	-1.4870	0.1370
Complete Saudi / Saudi & West.	969.0	-2.0522	0.0402

@ Statistics: The Mann-Whitney Test

Table 60a: Methods and Extent of Product Inspection According to Factory Ownership.

Method of Inspection		Factory Ownership															
		Complete Saudi				Saudi & Japanese				Saudi & Western				Total			
		(1) Never	(2) Little	(3) Sometimes	(4) Always	(1) Never	(2) Little	(3) Sometimes	(4) Always	(1) Never	(2) Little	(3) Sometimes	(4) Always	(1) Never	(2) Little	(3) Sometime	(4) Always
Employee Self Control	No.	0	11	27	22	0	3	3	34	1	10	23	26	1	24	53	82
	%	0.0	18.3	45.0	36.7	0.0	7.5	7.5	85.0	1.7	16.7	38.3	43.3	0.6	15.0	33.1	51.3
Internal Profess-ional Inspector	No.	2	5	16	37	0	2	10	28	0	4	22	34	2	11	48	99
	%	3.3	8.3	36.7	61.7	0.0	5.0	25.0	70.0	0.0	6.7	36.7	58.6	1.3	6.9	30.0	61.8
External Profess-ional Inspector	No.	5	19	33	3	15	15	10	3	10	17	26	4	30	51	69	10
	%	8.3	31.6	55.0	5.1	37.5	37.5	25.0	5.1	16.6	28.3	43.3	6.7	18.8	31.9	43.1	6.2

Table 60b: Statistical Results.

Factory Ownership	Methods of Inspection	Mean Rank	Chi-Square	Significance
Complete Saudi		69.69		
Saudi & Japanese	Employee Self Control	106.49	20.6325	0.0000
Saudi & Western		73.98		

Table 60c: Statistical Results.

Factory Ownership	Methods of Inspection	Mean Rank	Chi-Square	Significance
Complete Saudi		79.17		
Saudi & Japanese	Internal Inspector	87.47	1.71745	0.4237
Saudi & Western		77.18		

Table 60d: Statistical Results.

Factory Ownership	Methods of Inspection	Mean Rank	Chi-Square	Significance
Complete Saudi		88.12		
Saudi & Japanese	External Inspector	62.57	9.51695	0.0086
Saudi & Western		84.83		

θ Statistics: The Kruskal-Wallis One-Way Analysis of Variance

336

Table 60e: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Japanese	802.5	-3.0701	0.0021
Saudi & Japanese / Saudi & Western	880.5	-2.3849	0.0171
Complete Saudi / Saudi & Western	1740	-0.3433	0.7314

Table 60f: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Japanese	644.0	-4.3883	0.0000
Saudi & Japanese / Saudi & Western	716.0	-3.8912	0.0001
Complete Saudi / Saudi & Western	1707.5	-0.5240	0.6003

❶ **Statistics: The Mann-Whitney Test**

Table 61a: Action Taken to Improve Product Quality According to Factory Ownership.

Factory Ownership		Action Taken		
		(2) Slow	(3) Fast	Row Total
Complete Saudi	No.	27	33	60
	%	45.0	55.0	37.5
Saudi & Japanese	No.	11	29	40
	%	27.5	72.5	25.0
Saudi & Western	No.	23	37	60
	%	38.3	61.7	37.5
Column Total	No.	61	99	160
	%	38.2	61.8	100.0

Table 61b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	74.72		
Saudi & Japanese	89.14	3.2729	0.1947
Saudi & Western	80.52		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (nonparametric Statistics) $P > 0.05$

338

Table 62a: Location of Product Design According to Factory Ownership.

Location of Product Design		Factory Ownership						Total	
		Complete Saudi		Saudi & Japanese		Saudi & Western			
		Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.
Within Saudi Arabia	No.	12	48	11	29	15	45	38	122
by Factory Staff	%	20.0	80.0	27.5	72.5	25.0	75.0	23.8	76.2
Within Saudi Arabia	No.	3	57	2	38	7	53	12	148
by Professional Staff	%	5.0	95.0	5.0	95.0	11.7	88.3	7.5	92.5
Outside Saudi Arabia	No.	35	25	22	18	26	34	83	77
by Factory Staff	%	58.3	41.7	55.0	45.0	43.3	56.7	51.9	48.1
Outside Saudi Arabia	No.	35	25	20	20	40	20	95	65
by Professional Staff	%	58.3	41.7	50.0	50.0	66.7	33.3	59.4	40.6
Other	No.	2	58	1	39	2	58	5	155
	%	3.3	96.7	2.5	97.5	3.3	96.7	3.1	96.9

Table 62b: Statistical Results.

Location of Product Design	Chi-Square	D.F.	Significance
Within Saudi Arabia by Factory Staff	0.82830	2	0.6609
Within Saudi Arabia by Professional Staff	2.40240	2	0.3008
Outside Saudi Arabia by Factory Staff	2.91243	2	0.2331
Outside Saudi Arabia by Professional Staff	2.80702	2	0.2457
Other	0.06882	2	0.9662

@ Statistics: Crosstabulation $P > 0.05$

Table 63a: Time Spent in Product Design Cycle According to Factory Ownership.

Factory Ownership		Time Spent in Design Cycle				
		(1) Very Short	(2) Short	(3) Fair	(4) Long	Row Total
Complete Saudi	No.	10	7	35	8	60
	%	16.7	11.7	58.3	13.3	37.5
Saudi & Japanese	No.	2	4	20	14	40
	%	5.0	10.0	50.0	35.0	25.0
Saudi & Western	No.	8	10	28	14	60
	%	13.3	16.7	46.6	23.4	37.5
Column Total	No.	20	21	83	36	160
	%	12.5	13.2	51.8	22.5	100.0

Table 63b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	73.88		
Saudi & Japanese	86.79	2.3933	0.3022
Saudi & Western	82.93		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)   P > 0.05

Table 64a: Numbers of Running Product Tests According to Factory Ownership.

Factory Ownership		Times of Running Product Tests				
		(1) Never	(2) Few	(3) Reasonable	(4) Many	Row Total
Complete Saudi	No.	4	27	17	12	60
	%	6.7	45.0	28.3	20.0	37.5
Saudi & Japanese	No.	1	11	16	12	40
	%	2.5	27.5	40.0	30.0	25.0
Saudi & Western	No.	5	15	32	8	60
	%	8.3	25.0	53.3	13.3	37.5
Column Total	No.	10	53	65	32	160
	%	6.3	33.1	40.6	20.0	100.0

Table 64b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	73.12		
Saudi & Japanese	92.06	4.5225	0.1042
Saudi & Western	80.17		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P > 0.05$

Table 65a: Reasons for not Maintaining Regular Product Tests According to Factory Ownership.

Factory Ownership		Reasons for not Maintaining Regular Tests				
		Cost of Pilot Testing	Concern About Leading Time	Allowing Defect Rate	Other	Row Total
Complete Saudi	No.	11	29	6	2	48
	%	22.9	60.4	12.5	4.2	37.5
Saudi & Japanese	No.	3	15	3	7	28
	%	10.7	53.6	10.7	25.0	21.9
Saudi & Western	No.	10	27	5	10	52
	%	19.2	51.9	9.6	19.2	40.6
Column Total	No.	24	71	14	19	128
	%	18.8	55.5	10.9	14.8	100.0

Table 65b: Statistical Results.

Chi-Square	D.F.	Significance
8.2608	6	0.2196

@ **Statistics:** Crosstabulation; $P > 0.05$

Table 66a: Source of Raw Material According to Factory Ownership.

Source of RAW Material	Factory Ownership	Mean Rank	Chi-Square	Significance
US / UK	Complete Saudi	91.00	28.6267	0.0000
	Saudi & Japanese	48.06		
	Saudi & Western	91.63		
Japan	Complete Saudi	72.52	37.5736	0.0000
	Saudi & Japanese	115.75		
	Saudi & Western	64.98		
Saudi Arabia	Complete Saudi	73.76	2.5087	0.2853
	Saudi & Japanese	85.85		
	Saudi & Western	83.67		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)

Table 66b: Statistical Results.

Source of Raw Material	Factory Ownership	U	Z	P
US / UK	Complete Saudi / Saudi & Jap.	580.5	-4.6157	0.0000
	Saudi & Jap. / Saudi & West.	522.0	-4.9236	0.0000
	Complete Saudi / Saudi & West.	1789.5	-0.0590	0.9530
Japan	Complete Saudi / Saudi & Jap.	578.5	-4.6369	0.0000
	Saudi & Jap. / Saudi & West.	411.5	-5.8992	0.0000
	Complete Saudi / Saudi & West.	1657.5	-0.8825	0.3775
Saudi Arabia	Complete Saudi / Saudi & Jap.	-	-	-
	Saudi & Jap. / Saudi & West.	-	-	-
	Complete Saudi / Saudi & West.	-	-	-

@ Statistics: The Mann-Whitney Test

Table 67a: Proportion of Manufacturing Cost According to Factory Ownership.

Manufacturing Cost	Factory Ownership	Mean Rank	Chi-Square	Significance
Material cost	Complete Saudi	79.18	0.1779	0.9149
	Saudi & Japanese	79.55		
	Saudi & Western	82.45		
Labour Cost	Complete Saudi	69.17	6.7531	0.0343
	Saudi & Japanese	91.65		
	Saudi & Western	86.40		
Manufacturing Overhead Cost	Complete Saudi	94.98	10.9284	0.0042
	Saudi & Japanese	66.39		
	Saudi & Western	75.42		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)

Table 67b: Statistical Results.

Manufacturing Cost	Factory Ownership	U	Z	P
Material Cost	Complete Saudi / Saudi & Jap.	-	-	-
	Saudi & Jap. / Saudi & West.	-	-	-
	Complete Saudi / Saudi & West.	-	-	-
Labour Cost	Complete Saudi / Saudi & Jap.	867.5	-2.4370	0.0148
	Saudi & Jap. / Saudi & West.	1086.5	-0.8190	0.4128
	Complete Saudi / Saudi & West.	937.0	-1.8898	0.0491
Manufaturing Overhead Cost	Complete Saudi / Saudi & Jap.	741.5	-3.3357	0.0009
	Saudi & Jap. / Saudi & West.	1094.0	-0.7705	0.4410
	Complete Saudi / Saudi & West.	1389.0	-2.2371	0.0253

@ Statistics: The Mann-Whitney Test

344

Table 68a: Number of Factory Suppliers According to Factory Ownership.

Factory Ownership		Number of Factory Suppliers			
		(2) Five	(3) Ten	(4) More	Row Total
Complete Saudi	No.	22	18	20	60
	%	36.7	30.0	33.3	37.5
Saudi & Japanese	No.	29	6	5	40
	%	72.5	15.0	12.5	25.0
Saudi & Western	No.	19	19	22	60
	%	31.7	31.7	36.7	37.5
Column Total	No.	70	43	47	160
	%	43.7	26.9	29.4	100.0

Table 68b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	87.57		
Saudi & Japanese	53.07	21.1678	0.0000
Saudi & Western	91.72		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)   P < 0.05

Table 68c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	678.0	-3.9039	0.0001
Saudi & Jap. / Saudi & West.	625.0	-4.2252	0.0000
Complete Saudi / Saudi & West.	1702.0	-0.5458	0.5852

@ Statistics: The Mann-Whitney Test

345

Table 69a: Suppliers' Duration of Business Conduct With Factories According to Factory Ownership.

Factory Ownership		Length of Time		
		(2) Some Time	(3) Long time	Row Total
Complete Saudi	No.	27	33	60
	%	45.0	55.0	37.5
Saudi & Japanese.	No.	5	35	40
	%	12.5	87.0	25.0
Saudi & Western	No.	37	23	60
	%	61.7	38.3	37.5
Column Total	No.	69	91	160
	%	43.2	56.8	100.0

Table 69h: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	73.67		
Saudi & Japanese	95.67	12.9576	0.0004
Saudi & Western	65.25		

@ **Statistics:** The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)   P < 0.05

Table 69c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	967.0	-2.0715	0.0383
Saudi & Jap. / Saudi & West.	600.0	-4.5621	0.0000
Complete Saudi / Saudi & West.	1182.0	-0.1567	0.6747

@ **Statistics:** The Mann-Whitney Test

Table 70a: Bases for Selecting Suppliers According

to Factory Ownership.

Selecting Suppliers	Factory Ownership	Mean Rank	Chi-Square	Significance
Low Price	Complete Saudi	81.01	0.9558	0.6201
	Saudi & Japanese	76.27		
	Saudi & Western	82.81		
Supplier Quality Performance	Complete Saudi	71.76	17.5899	0.0002
	Saudi & Japanese	101.59		
	Saudi & Western	75.18		
Price and Supplier Performance	Complete Saudi	81.36	10.6921	0.0048
	Saudi & Japanese	61.69		
	Saudi & Western	92.18		
Mutual Trust	Complete Saudi	77.67	34.2609	0.0000
	Saudi & Japanese	112.56		
	Saudi & Western	61.96		
Personal Relationship	Complete Saudi	100.77	23.9139	0.0000
	Saudi & Japanese	73.20		
	Saudi & Western	65.10		
Other	Complete Saudi	76.01	1.9642	0.3745
	Saudi & Japanese	85.16		
	Saudi & Western	81.88		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics)

Table 70b: Statistical Results.

Selecting Suppliers	Factory Ownership	U	Z	P
Low Price	Complete Saudi / Saudi & Jap.	-	-	-
	Saudi & Jap. / Saudi & West.	-	-	-
	Complete Saudi / Saudi & West.	-	-	-
Supplier Quality Performance	Complete Saudi / Saudi & Jap.	737.5	-3.8618	0.0001
	Saudi & Jap. / Saudi & West.	819.0	-3.1507	0.0016
	Complete Saudi / Saudi & West.	1738.0	-0.4738	0.6356
Price and Supplier Performance	Complete Saudi / Saudi & Jap.	872.5	-2.3241	0.0201
	Saudi & Jap. / Saudi & West.	776.0	-3.0361	0.0024
	Complete Saudi / Saudi & West.	1524.0	-1.4759	0.1400
Mutual Trust	Complete Saudi / Saudi & Jap.	651.0	-4.0308	0.0001
	Saudi & Jap. / Saudi & West.	466.5	-5.5861	0.0000
	Complete Saudi / Saudi & West.	1421.0	-2.3426	0.0191
Personal Relationship	Complete Saudi / Saudi & Jap.	775.0	-3.1825	0.0014
	Saudi & Jap. / Saudi & West.	1067.0	-1.1860	0.2356
	Complete Saudi / Saudi & West.	1009.0	-4.5811	0.0000
Other	Complete Saudi / Saudi & Jap.	-	-	-
	Saudi & Jap. / Saudi & West.	-	-	-
	Complete Saudi / Saudi & West.	-	-	-

@ Statistics: The Mann-Whitney Test

Table 71a: Suppliers' Involvement in Quality Improvement According to Factory Ownership.

Factory Ownership		Suppliers' Involvement in Quality Improvement			
		Yes	No	Being Developed	Row Total
Complete Saudi	No.	7	29	15	51
	%	13.7	56.9	29.4	36.2
Saudi & Japanese	No.	17	3	17	37
	%	45.9	8.1	45.9	26.2
Saudi & Western	No.	13	26	14	53
	%	24.5	49.1	26.4	37.6
Column Total	No.	37	58	46	141
	%	26.2	41.2	32.6	100.0

Table 71b: Statistical Results.

Chi-Square	D.F.	Significance
17.2970	4	0.0001

@ **Statistics:** Crosstabulation; $P < 0.05$

Table 72a: Form of Suppliers' Involvement in Quality Improvement According to Factory Ownership.

Factory Ownership		Form of Suppliers' Involvement		
		Formal	Informal	Row Total
Complete Saudi	No.	8	21	29
	%	27.6	72.4	40.3
Saudi & Japanese	No.	15	2	17
	%	88.2	11.8	23.6
Saudi & Western	No.	6	20	26
	%	23.1	76.9	36.1
Column Total	No.	29	43	72
	%	40.3	59.7	100.0

Table 72b: Statistical Results.

Chi-Square	D.F.	Significance
21.3938	2	0.0000

@ **Statistics: Crosstabulation;**   P < 0.05

350

Table 73a: Inspection of Incoming Raw Material According to Factory Ownership.

factory Ownership		Inspection of Incoming Raw Material			
		Working With Suppliers	Quality Staff	Both	Row Total
Complete Saudi	No.	1	35	24	60
	%	1.7	58.3	40.0	37.5
Saudi & Japanese	No.	7	6	27	40
	%	17.5	15.0	67.5	25.0
Saudi & Western	No.	4	33	23	60
	%	6.6	55.0	38.3	37.5
Column Total	No.	12	74	68	160
	%	7.5	46.2	46.3	100.0

Table 73b: Statistical Results.

Chi-Square	D.F.	Significance
15.90484	4	0.0031

@ **Statistics: Crosstabulation;**   P < 0.05

Table 74a: Application of Just in Time (JIT) Technique According to Factory Ownership.

Factory Ownership		Applying (JIT)			
		Yes	No	Being Developed	Row Total
Complete Saudi	No.	5	10	11	60
	%	19.2	38.5	42.3	37.5
Saudi & Japanese	No.	5	17	8	40
	%	16.7	56.7	26.7	25.0
Saudi & Western	No.	9	32	6	60
	%	19.1	68.1	12.8	37.5
Column Total	No.	19	59	25	160
	%	18.4	57.3	24.3	100.0

Table 74b: Statistical Results.

Chi-Square	D.F.	Significance
8.7590	4	0.6674

@ Statistics: Crosstabulation;   P > 0.05

Table 75a: Consultation With Production Workers According to Factory Ownership.

Factory Ownership		Consultation			
		(3) All Stages	(2) Some Stages	(1) Never	Row Total
Complete Saudi	No.	25	5	14	44
	%	56,8	11.4	31.8	34.4
Saudi & Japanese	No.	28	8	0	36
	%	77.8	22.2	0.0	28.1
Saudi & Western	No.	30	13	5	48
	%	62,5	27	10.4	37.5
Column Total	No.	83	26	19	128
	%	64.8	20.3	14.8	100.0

Table 75b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	62.94		
Saudi & Japanese	75.69	9.2266	0.0099
Saudi & Western	66.57		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P < 0.05$

Table 75c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	566.0	-2.7490	0.0060
Saudi & Jap. / Saudi & West.	674.0	-2.4546	0.0141
Complete Saudi / Saudi & West.	965.0	-0.9201	0.3575

@ Statistics: The Mann-Whitney Test

353

Table 76a: Responsibility of Production Workers for Correcting Product According to Factory Ownership.

| Factory Ownership | | Responsibility of Production Workers | | | |
		(3) Yes in All Areas	(2) Yes in Some Areas	(1) No Respon- sibility	Row Total
Complete Saudi	No.	23	26	6	55
	%	41.8	47.3	10.9	37.4
Saudi & Japanese	No.	29	10	0	39
	%	74.4	25.0	0.0	26.5
Saudi & Western	No.	35	17	1	53
	%	66.4	32.7	1.9	36.1
Column Total	No.	87	53	7	147
	%	59.2	36.1	4.7	100.0

Table 76b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	56.95		
Saudi & Japanese	83.55	11.8618	0.0027
Saudi & Western	76.64		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonpara-metric Statistics)   P < 0.05

Table 76c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	693.0	-3.3051	0.0009
Saudi & Jap. / Saudi & West.	1311.5	-1.0070	0.3193
Complete Saudi / Saudi & West.	747.0	-2.6397	0.0083

@ Statistics: The Mann-Whitney Test

Table 77a: Authority of Production Workers in Stopping Production Line According to Factory Ownership.

Factory Ownership		Authority			
		(3) Yes at All Levels	(2) Yes at Some Levels	(1) No Auth- ority	Row Total
Complete Saudi	No.	13	38	7	58
	%	22.4	65.5	12.1	37.5
Saudi & Japanese	No.	7	31	1	39
	%	17.9	79.5	2.6	25.3
Saudi & Western	No.	17	36	4	57
	%	29.8	63.2	7.0	37.0
Column Total	No.	37	105	12	154
	%	24.0	68.2	7.8	100.0

Table 77b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	72.93		
Saudi & Japanese	78.76	1.5211	0.4674
Saudi & Western	81.15		

@ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) $P > 0.05$

355

Table 78a: Performance of Daily Checkes by Machine Operators According to Factory Ownership.

Factory Ownership		Machine Daily Checking			
		(3) All Areas	(2) Some Areas	(1) NO	Row Total
Complete Saudi	No.	17	38	7	60
	%	30.0	68.8	11.7	37.5
Saudi & Japanese	No.	32	8	0	40
	%	80.0	20.0	0.0	25.5
Saudi & Western	No.	18	33	9	60
	%	35.6	64.7	15.0	37.5
Column Total	No.	67	79	16	160
	%	45.8	54.1	10.1	100.0

Table 78b: Statistical Results.

Factory Ownership	Mean Rank	Chi-Square	Significance
Complete Saudi	48.40		
Saudi & Japanese	85.18	26.0600	0,0000
Saudi & Western	57.59		

○ Statistics: The Kruskal-Wallis One-Way Analysis of Variance (Nonparametric Statistics) P < 0.05

Table 78c: Statistical Results.

Factory Ownership	U	Z	P
Complete Saudi / Saudi & Jap.	552.0	-4,7242	0.0000
Saudi & Jap. / Saudi & West.	564.00	-4.2308	0.0000
Complete Saudi / Saudi & West.	1308.0	-0.7203	0.4714

@ Statistics: The Mann-Whitney Test

356

Table 79a: Action Taken to Correct Problems in the Production Line According to Factory Ownership.

Action to Correct Problems in the Production Line		Complete Saudi		Saudi & Japanese		Saudi & Western		Total	
		Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.	Applic.	Not Applic.
Problem is Investigated	No.	6	54	5	35	9	51	21	140
by Those Who Located it	%	10.0	90.0	12.5	87.5	15.0	85.0	13.1	87.5
Problem is Investigated by a	No.	21	39	34	6	15	45	70	90
Workers' Group While the Rest of	%	35.0	65.0	85.0	15.0	25.0	75.0	43.7	56.3
the Workers Move to Another Line									
Workers Stop the Production Line	No.	55	5	17	23	43	17	115	45
and Call the Maintenance Dept.	%	91.7	8.3	42.5	57.5	71.7	28.3	71.9	28.1
Other	No.	2	58	1	39	5	55	8	152
	%	3.3	96.7	2.5	97.5	8.3	91.7	5.0	95.0

The column headers span "Factory Ownership" over Complete Saudi, Saudi & Japanese, Saudi & Western, and Total.

357

Table 79b: Statistical Results.

Action to Correct Problem in Production Line	Chi-Square	D.F.	Significance
Problem is Investigated by Those Who Located it	4.1110	2	0.1280
Problem is Investigated by a Workers' Group While the Rest of the Workers Move to Another Line	38.0952	2	0.0000
Workers Stop the Production Line and Call the Maintenance Dept.	28.7020	2	0.0000
Other	2.2807	2	0.3197

O Statistics: Crosstabulation

Appendix Two

Questionnaire Design

Summary

This questionnaire has been divided into four sections. The first section provides general information about the factories and their managers who are involved in this questionnaire.

The second section explores the management philosophy applied in each factory with regard to product quality - those elements which will be covered in this section include management philosphy toward their employees, customers, suppliers, competitors, and the government.

The third section covers the management practices with regards to product quality applied in each factory to achieve high quality products. The following aspects will be discussed in more detail:

3.1 Planning

3.1.1 Allocating resources
3.1.2 Establishing goals
3.1.3 Leadership style
3.1.4 Decision-making style

3.2 Organising

3.2.1 Designing structure
3.2.2 Co-ordinating between departments
3.2.3 Managing conflict and change
3.2.4 Arranging delegation

3.3 Leading

3.3.1 Forming communications
3.3.2 Motivating employees
3.3.3 Developing personnel

3.4 Controlling

3.4.1 Establishing standards
3.4.2 Measurement for inspection
3.4.3 Taking action

The fourth Section covers the production management with regards to Product quality applied in each factory to achieve high quality Products.The following aspects will be discussed in more edtail:

4.1   Quality of product design
4.2   Quality of suppliers performance
4.3   Quality of production operation

Section One : General information

1. What is your title?_____

2. How long have you been working in this factory? (Please tick one)

    1-4 years   ( )
    5-10 years   ( )
    Over 10 years   ( )

3. What nationality are you? (please tick one)

    Western   ( )
    Japanese   ( )
    Saudi   ( )

4. Which of the following (statements) applies (best) to your situation?
    (Please tick one)
    Japanese manager working in Saudi & Japanese joint venture   ( )
    Saudi manager working in Saudi & Japanese joint venture   ( )
    Western manager working in Saudi & Western joint venture   ( )
    Saudi manager working in Saudi & Western joint venture   ( )
    Saudi manager working in complete Saudi ownership   ( )

5. Where is the location of your factory? (Please tick one)

    Al-Jubail   ( )
    Other   ( )

6. What is the age of your factory? (Please tick one)

    1-4 years   ( )
    5-7 years   ( )
    8-10 yerars   ( )
    Over 10 years   ( )

7. Which of the following describes the total number of employees in your factory? (Please tick one)

1-250   ( )
251-500   ( )
501-800   ( )
Over 800

8. What is the percentage of Saudi employee?_____

9. Which of the following describes your factory ownership? (Please tick one)

Complete Saudi ownership   ( )
Saudi & Japanese joint venture   ( )
Saudi & Western joint venture   ( )

Section two : Management Philosophy

10. In your view, which of the following sentences explain the most important of your managements's objective? (Please tick one)

Producing products which generate high profit   ( )
Producing products which suit available resources   ( )
Producing products which provide opportunities in the market   ( )
Other   ( )

11. What is the average age of your employees? (Please tick one)

20-25   ( )
26-30   ( )
31-35   ( )
36-40   ( )
Over 40   ( )

12. In your view what does your management consider to be the most important
    characteristic in selecting its employees? (Please enter approximate proportion).

    CHARACTERISTIC   **PROPORTION**

    Age   _____ %
    Skills   _____ %
    Employees' attitude   _____ %
    Certification   _____ %
    Other knowledge   _____ %
    Ability to co-operate with others   _____ %
    Other   _____ %
    Total
                                                     _____100_%

13. In your view, to what extent do you think the attitude of
    employee contribute to improving the product quality? (Please circle one)

    1 = No contribution at all
                                                     1 2 3 4 5
    5 = Eecellent

14. To what extent do you consider your factory is either labour
    or capital intensive? (Please circle one)

    1 = Very labour intensive
                                                     1 2 3 4 5
    5 = Very capital intensive

15. In your view, to what extent does your management consider their
    employees as a family? (Please tick one for each)

    Managers

    1 = poor
    5 = excellent   1 2 3 4 5

    Workforce

    1 = poor
    5 = excellent   1 2 3 4 5

16. How would you describe the relationships between labour
and management in your factory? (Please circle one)

1 = Poor

                                                        1 2 3 4 5

5 = Excellent

17. To what extent do you think your management involves customers
in determining the quality of its products? (Please circle one)

1 = Customers are not involved at all

5 = Customers are fully involved   1 2 3 4 5

18. To what extent do you believe your suppliers have contributed
to improve product quality? (Please circle one)

1 = Very harmful

                                                        1 2 3 4 5

5 = Very helpful

19. Which of the following do you consider the most important weapon
your management applied against their competitors? (Please tick one)

Price	( )
Quality	( )
Advertising	( )
Distribution	( )
Other	( )

20. To what extent do you think quality has contributed to the
success of your factory? (Please circle one)

1 = No contribution at all

                                                        1 2 3 4 5

5 = Very Good

21. To what extent, do you believe your management invests in
improving product quality?(Please circle one)

1 = Not at all

                                                        1 2 3 4 5

5 = Excellent

22. If you scored 4 or 5 how do you see your factory investment
    in improving product quality? (Please tick as many as possible)

    Buying more advanced technology   ( )
    Providing more training programmes for employees   ( )
    Providing more seminars and conferences   ( )
    Applying more research in marketing to respond to customer needs ( )
    Applying more R & D in product development   ( )
    Spending more money in developing its suppliers   ( )
    Other   ( )

23. In your view, which of the following make an important
    contribution to product quality?   (Please enter approximate proportion)

    Managers   _____ %
    Workforce   _____ %
    Competitors   _____ %
    Customers   _____ %
    Market Research   _____ %
    Technology   _____ %
    Other   _____ %
    Total   100 %

24. To what extent do you think the government's attitude towards
    factories has affected product quality?   (Please circle one)

    1 = very harmful
                                                     1 2 3 4 5
    5 = very helpful

Section Three : Management Practices

3.1 Planning

3.1.1 Allocating resources

25. In your view, how would you describe your management's planning for improving the product quality? (Please tick one only)

There is no specific planning at all	( )
There is short term planning (one year)	( )
There is medium range planning (2-4 years)	( )
There is long range planning (over four years)	( )
No idea	( )

3.1.2 Establishing goals

26. Do you believe that all employees understand the main objectives of product quality? (Please tick one)

Yes	( )
No	( )
No idea	( )

27. If you answer yes, How do you think these objectives were established? (Please tick one)

Given to the employees by top management without consulting anyone	( )
Given to employees by top management with consultation of different departments	( )
Set by individual managers without consulting others	( )
Set by individual managers in full consultation with top management only	( )
Set by individual managers in full consultation with his subordinates only	( )
Set by individual managers in full consultation with his subordinates, colleagues and top management	( )

28. What do you think the main source of your information is
for these objectives? (Please tick one)

Having a manual of the factory policy	( )
Discussion with other employees during working time	( )
Employees feelings as working in a group	( )
Unwritten policy emphasised by top management and recognised by all employees in the factory	( )
Other	( )

29. 3.1.3 Leadership style

To what extent do you consider your top management is involved
in planning for product quality improvement? (Please Circle one)

1 = Not involved at all

1 2 3 4 5

5 = Fully involved

30. Which of the following do you believe your management applies to implement
the improvement of product quality? (Please tick only those which apply)

Organising seminars regarding quality improvement for
managers presented by the factory's management   ( )

Organising seminars regarding quality improvement for
managers presented by visiting professionals   ( )

Designing training programs regarding quality improvement
for the other employees in the factory   ( )

Sending top managers to attend domestic and/or international
conferences in the quality subject   ( )

Sending workers to attend training courses in other countries   ( )

31. How do you see your top management commitment to product
    quality improvement? (Please circle one)

    1 = not committed at all

    2 = extremely committed

                                                            1 2 3 4 5

3.1.4 Decision making style

32. In your view, how do you see decisions concerning product
    quality are made in your factory? (Please tick one)

    Managers make their decisions based on factory rules without   ( )
    consulting others

    Managers make their decisions based on their experiences   ( )
    without consulting others

    Managers make their decisions after consulting their   ( )
    subordinates in the same departments

    Managers make their decisions after consulting their colleagues   ( )
    in other departments

    Managers make their decisions after consulting both their   ( )
    subordinates and colleagues

33. To what extent do you think other departments involve you
    in decisions concerning product quality which affect your
    department? (Please tick one only)

    They often consult me before implementation   (4)
    They sometimes consult me before implementation   (3)
    They very rarely consult me before implementation   (2)
    They never consult me at all   (1)

34. How would you describe the length of time spent in decision
    making concerning quality?(Please tick one)

    Long timee   (3)
    Reasonable   (2)
    Short time   (1)

35. How would you describe the time spent in implementing the
decision concerning quality through different departments? (Please tick one)

Long time	(3)
Reasonable	(2)
Short time	(1)

3.2 Organising

3.2.1 Designing structure

36. How would you describe your factory's structure? (Please tick one)

Formal	( )
Informal	( )
No idea	( )

37. How would you describe the number of departments in your factory?
(Please tick one)

Few	( )
Reasonable	( )
Many	( )
No idea	( )

3.2.2 Co-ordinating between departments

38. How would you describe the interaction between departments
concerning product quality?(Please tick one)

They are not co-operative at all	( )
They are quite co-operative	( )
They are very co-operative	( )
No idea	( )

39. Do you discuss your objectives regarding product quality with
other employees in your factory?(Please tick one)

Yes	( )
No	( )

40. If yes, with whom do you discuss these objectives with? (Please tick one)

Colleagues in the same department   ( )
Colleagues in the same department as well as others   ( )
Colleagues who are working in relevant departments only   ( )
Only those colleagues with whom I have a good relationship   ( )

41. If you have discussed objectives with others, why did you do this?
(Please tick one)

You are concerned about your job and you want to make sure
that you understand colleagues objectives as well as they   ( )
understand your own.

You are concerned about your department and you want to
encourage your subordinates to co-operate together to   ( )
achieve the department's goals

You are concerned about the overall goal of the factory,   ( )
concerning product quality

42. If you haven't discussed these objectives with others, why not? (Please tick one)

You are not interested in discussing other employees objectives   ( )

You think other employees are not interested in discussing your objectives   ( )

Not all employees are aware of product quality objectives   ( )

Not all employees get along with others   ( )

Sometimes there is conflict between individuals' objectives   ( )

3.2.3 Managing Conflict and Change

43. How often do you find it necessary to introduce modification to your original plan in order to ensure high quality products? (Please tick one)

Very often	(4)
Sometimes	(3)
Rarely	(2)
Never	(1)

44. If you ticked one of the first three choices in question 43, how do you think this modification should be implemented? (Please tick one)

Decisions taken by top management without consulting employees,   ( )
and enforcing it by authority

Consulting all employees in the factory before making any modification   ( )

Consulting only those managers who will be affected directly by
that modification   ( )

Consulting only a few managers who are trustworthy   ( )

Consulting professional people from outside the factory   ( )

45. How would you describe the attitude of managers and workforce toward modification? (Please tick one for managers and another tick for workforce)

	Managers	Workforce
They strongly resist it	(3)	(3)
They accept it with some resistance	(2)	(2)
They accept it and support it	(1)	(1)

3.2.4 Arranging delegation

46. In your view, how would you describe the authority and rssponsibility terms for both individual and groups in your factory concerning product quality? (Please tick one for individual and one for group)

	Individual	Group
Extremely clear	(1)	(1)
Slightly clear	(2)	(2)
Ambiguous	(3)	(3)
Extremely unclear	(4)	(4)

47. In your view, to what extent do you feel your top management delegate both authority and responsibility to improve product quality? (Please circle one)

1 = They don't delegate at all
4 = Excellent   1   2   3   4

48. If you scored 3 or less, where do you think the essential problem lies ?
(Please tick one only)

Top management doesn't want to relinquish control   ( )
Top management doesn't have confidence in their employees   ( )
Top management doesn't have trust in their employees   ( )
Employees are not interested in accepting responsibility and   ( )
authority
Other   ( )

3.3   Leading

3.3.1 Forming Communication

49. How do you see the form of communication in your factory? (Please tick one)

formal   ( )
informal   ( )

50. Please indicate approximate proportion of each of the following communication forms applied in your factory?

Discussion at dining or coffee room   _____%
Regular meetings before work   _____%
Morning meetings before work   _____%
Telephone calls   _____%
Personal visits at office   _____%
Mail   _____%
Other   _____%
Total   100 %

51. In your view, why does this contact take place during worktime?
    (Please tick as many as possible)

    A matter of daily routine   ( )
    To co-ordinate between employees   ( )
    To respond to a specific problem   ( )
    To emphasise the feeling of team work   ( )
    To emphasise the main objectives of the factory   ( )
    To have a social talk   ( )

3.3.2 Motivating employees

52. How does top management motivate their employees in your factory?
    (Please tick one)

    Based on individual motivation   ( )
    Based on group motivation   ( )

53. In your view, how important are the following incentives in
    your factory to improve product quality? (Please circle one for each item)

	Not Important	Slightly Important	Important	Extremely Important
Cash Received	1	2	3	4
Encouraging team work	1	2	3	4
Encouraging employee involvement	1	2	3	4
Providing special recognition	1	2	3	4
Providing more training programmes	1	2	3	4
Providing lifetime employment	1	2	3	4
Providing quick promotion	1	2	3	4
Delegating more authority	1	2	3	4
Providing good compensation in case of retirement	1	2	3	4
Providing social services for employees' families	1	2	3	4
Providing social activities for employees at weekends	1	2	3	4

3.3.3 Developing personnel

54. To what extent do you believe your managment invest in developing their employees? (Please circle one)

    1 = They are not investing at all

    5 = Excellent

    1 2 3 4 5

55. What kind of training does your management provide for a new employee? (Please Tick one)

    Specific training related to a specific job ( )
    General training related to different jobs ( )

56. What is the average time your management spend in training new employees?(Please tick one)

    About one week (1)
    About one month (2)
    About six months (3)
    More than six months (4)

3.4 Controlling

3.4.1 Establishing standards

57. Do you think your factory has a specific standard for its product?

    Yes ( )
    No ( )

58. If yes, does your factory operate according to:(Please tick one)

    Its own standards ( )
    National standards set by the National Specification Law ( )
    International standards set by International Specification Law ( )
    Competitors standards ( )

59. To what extent is statistical quality control applied in yourfactory?
(Please circle one)

1 = Little

                                                        1 2 3 4 5

5 = Excellent

3.4.2 Measurement for inspection

60. How would you describe the number of inspectors in your factory?
(Please tick one)

There are no inspectors at all	(1)
There are few inspectors	(2)
There are many inspectors	(3)

61. Which of the following methods does your factory rely on for
inspecting its product and to what extent?

	Never	Very Little	Sometimes	Always
Employee self control	1	2	3	4
Professional inspectors from inside the factory	1	2	3	4
Professional inspectors from outside the factory	1	2	3	4

3.4.3 Taking action

62. How would you describe the degree of action taken in your
factory to improve product quality? (Please Tick one)

No action is taken at all	(1)
Action is taken, but vey slowly	(2)
Action is taken right away	(3)

Section four: Production Management

4.1 Quality of product design

63. Where is the product design carried out at your factory?
    (Please tick what ever is relvant)

    Inside Saudi Arabia by engineering and development staff   ( )

    Inside Saudi Arabia by professional people from outside the factory   ( )

    Outside Saudi Arabia by engineering and development staff   ( )
    employed by the factory

    Outside Saudi Arabia by professional people from outside the factory   ( )

    Other   ( )

64. How would you describe the length of time spent in product
    design cycle specification at your factory?(Please circle one)

    1 = Very Short

                                            1   2   3   4

    5 = Very Long

65. How many times do you think your factory run product testing
    at the various stages of product development? (Please tick one)

    Never   (1)
    Few   (2)
    Reasonable   (3)
    Many   (4)

66. If you ticked one of the above three choices, which of the
    following reasons explain that attitude?(Please tick one)

    Management is very concerned about the cost of pilot testing   ( )
    Management is very concerned about the leading time in the market

         ( )

    Management allows some proportion for defect rate   ( )
    Other (please specify)   ( )

4.2 Quality of suppliers performance

67. What percentage of raw material is bought from

U.S / U.K	_____%
Japan	_____%
Saudi Arabia	_____%
Total	100 %

68. What is the proportion of the manufacturing cost at your factory?

Material cost	_____%
Labour cost	_____%
Manufacturing overhead cost	_____%
Total	100 %

69. How many suppliers does your factory deal with?
    (Please tick one)

Only one supplier	(1)
About five suppliers	(2)
About ten suppliers	(3)
More than ten suppliers	(4)

70. How long has your factory been conducting business with its supplier-suppliers? (Please tick one)

Just recently	(1)
For some time	(2)
For along time	(3)

71. Please enter the appropriate proportion for the following elements in terms of their importance to your factory in selecting suppliers?

Low prices	_____%
Supplier quality performance	_____%
Both of the above	_____%
Mutual trust	_____%
Personal relationships	_____%
Other	_____%
Total	100 %

72. Is your factory involved in any activity involving quality
    improvement with its suppliers?
    (Please tick one)

    Yes   ( )
    No   ( )
    Being developed   ( )
    No idea   ( )

73. If yes, has this been done through

    Formal involvement   ( )
    Informal involvement   ( )

74. How does your factory inspect incoming raw material?
    (Please tick one)

    By working together with suppliers   ( )
    By depending on the quality staff at the factory   ( )
    Both   ( )

75. Does your factory apply `Just In Time' (JIT) technique?
    (Please tick one)

    Yes   ( )
    No   ( )
    Being developed   ( )
    No idea   ( )

4.3 Quality of production operation

76. In your view, do you think your factory consults production
    workers at any stage of designing the production lines?
    (Please tick one)

    Never   (1)
    Yes, at some stages   (2)
    Yes, at all stages   (3)

77. Do production workers cary the main responsibility for
producing product correctly in production operation?
(Please tick one)

No   (1)
Yes,in some areas   (2)
Yes,in all areas   (3)

78. Do production workers have the authority to stop the production
line in the event of any problems occuring during the operation?
(Please tick one)

No   (1)
Yes, at some levels   (2)
Yes, at all levels   (3)

79. Do your machine operators perfom daily checks on their machines?
(Please tick one)

No   ( )
Yes,in some areas   ( )
Yes,in all areas   ( )

80. How would you describe the action taken in your factory
to correct problems in the production line?

Workers stop the production line right away and problem   ( )
is investigated by those who located it

Problem is investigated by aworkers group while the rest   ( )
of the workers move to another line

Workers stop their work and call the maintenance department ( )
to solve the problem

Other (Please specify)   ( )

Appendix Three

Models Used for this Study

RESEARCH MODEL
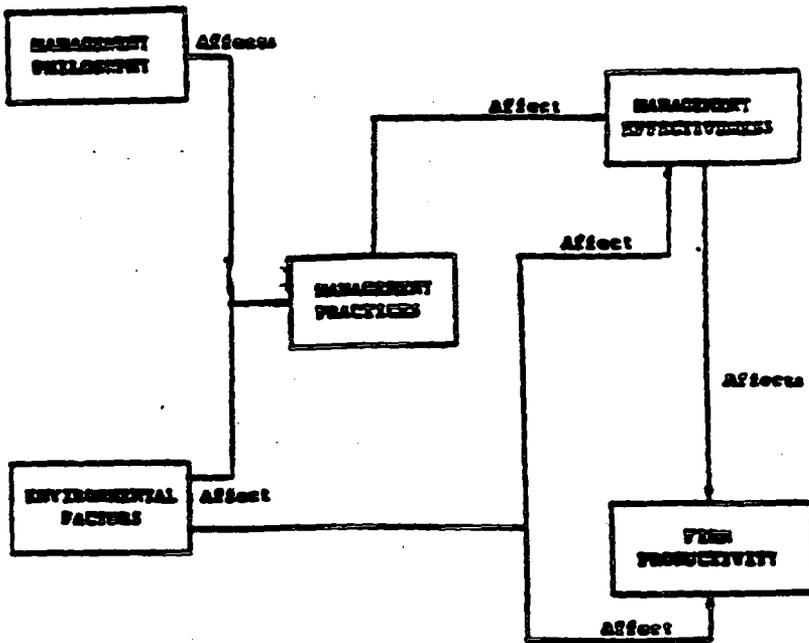
1. **Product Design:**   Design for Manufacture

   - Vendor collaboration

   - Production collaboration

   - Design cycle verification

2. **Vendor Relationships:**   Long-term relationships

   - Notice of long-term requirements

   - Short communication chain

   - Quality collaboration

   - Mutual trust

3. **Manufacturing Process:**   Total Process Quality Control

   - Rapid problem detection and response

   - Employee quality participation

   - Production equipment

   - Job methods

   - Working environment

Appendix Four

Table of Research Design Summary

Summary of The Research Design.

Nationality of Companies	Type of Groups	NO. of Companies	Location	Sector	Methodologies
American English Saudi	Saudi & West. Western Group	3	Al-jubail	Petrochemical	Questionnaires=60 Interviewers=6
Saudi	Saudi Saudi Group	3	Al-jubail	Petrochemical	Questionnaires=60 Interviewers=6
Japanese Saudi	Jap. & Saudi Japanese Group	2	Al-jubail	Petrochemical	Questionnaires=40 Interviewers=4

Appendix Five

Letters sent to Companies

Mr Abd-ulaziz A. Al-Zamil
Minister of Industry and Electricity
Jeddah
Saudi Arabia

21st September, 1990

Dear Mr Al-Zamil,

This School is conducting research into Japanese management systems and their suitability for Saudi Arabian production management. This will be carried out in the petro-chemical industry involves visits for personal interviews to Saudi, Western and Japanese firms.

The interviews are being carried out by Mr Fahad Adham, who is one of our doctoral students and a member of staff at the King Abd-ulaziz University. The research is part of his doctoral work, and in order to complete it, it is necessary to interview managers in a number of contrasting firms based in Saudi Arabia.

Would you kindly provide Mr Adham with a general recommendation letter, which he might use to help him win the necessary cooperation and so accomplish this field work.

We believe the results from this work will be important to Saudi industry and the petro-chemical firms concerned, particularly with regard to the adoption of quality management ideas.

Thank you for your consideration in this matter.

With respect and regards.

Yours sincerely,

**Durham University
Business School**

381

KINGDOM OF SAUDI ARABIA

Ministry of Higher Education

KING ABDULAZIZ UNIVERSITY

Scholarships Department

المملكة العربية السعودية

وزارة التعليم العالي

جامعة الملك عبد العزيز

ادارة البعثات
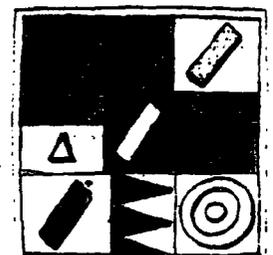
Ref. ....

Date ....

Encl. ....

الرقم ع/١٢١/١٧/٩٥

التاريخ ١٤١١/٣/٢٥هـ

المرفقات ....

سعادة مدير عام العلاقات العامة بالهيئة الملكية بالجبيل   المحترم

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من مرافق وشركات الهيئة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض •

نرجو التكرم بتقديم المساعدة ما امكن وفي حدود ما تسمح به الانظمة لديكم تهيئ لمهمته ، شاكرين لكم كريم تعاونكم •

وتفضلوا بقبول اطيب تحياتي،،،

مدير ادارة البعثات

محمد عمر بن تاج الدين جاوى

ع٢٥-٢-٣

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز

ادارة البعثات

الرقم ....

التاريخ ....

المرفقات ....

سعادة مدير سابــــــك   المحترم

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من الشركة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض ٠

نرجو التكرم بتقديم المساعدة اللازمة له ماامكن ٠

شاكرين لكم كريم تعاونكم ،،،،

وتفضلوا بقبول اطيب تحياتــــي،،،

مديـــر ادارة البعثـــــات

محمد عمر بن تاج الدين جاوز

ع٢٥-٣-٨

سعادة مدير شركة الجبيل للبتروكيماويات   المحترم

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من الشركة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض .

نرجو التكرم بتقديم المساعدة اللازمة له ما أمكن .

شاكرين لكم كريم تعاونكم ،،،،

وتفضلوا بقبول اطيب تحياتي،،،

مدير ادارة البعثات

محمد عمر بن تاج الدين جاوى

ع٢٥-٣-١٣

KINGDOM OF SAUDI ARABIA

Ministry of Higher Education

KING ABDULAZIZ UNIVERSITY

Scholarships Department

Ref. ....

Date ....

Encl. ....

المملكة العربية السعودية

وزارة التعليم العالي

جامعة الملك عبد العزيز

ادارة البعثات

الرقم ٧٩٦/١٠١/ع

التاريخ ٤٤ـ/٣/١١٤١٢هـ

المرفقات ....

سعادة مدير الشركة السعودية للبتروكيماويات   المحترم

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من الشركة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض •

نرجو التكرم بتقديم المساعدة اللازمة له ما امكن •

شاكرين لكم كريم تعاونكم ،،،،

وتفضلوا بقبول اطيب تحياتـــي،،،

مديــر ادارة البعثـــات

محمد عمر بن تاج الدين جاوى

ع٢٥-٣-٦

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز

ادارة البعثات

الرقم ع/ج/١٠١/٩٩٩

التاريخ ١٤٠٠/٣/...هـ

المرفقات ....

سعادة مدير الشركة السعودية للميثانول   المحترم

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة
للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من
الشركة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض •

نرجو التكرم بتقديم المساعدة اللازمة له ما أمكن •

شاكرين لكم كريم تعاونكم ،،،،

وتفضلوا بقبول اطيب تحياتـــي،،،

مديـــر ادارة البعثـــات

محمد عمر بن تاج الدين جاوى

ع٢٥-٣-٧

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز

ادارة البعثات

الرقم ع٠١٣١٢١٩٩

التاريخ ٢٤/٣/١١٩٩١م

المرفقات ....

سعادة مدير الشركة الوطنية للاسمدة الكيماوية   المحترم

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من الشركة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض •

نرجو التكرم بتقديم المساعدة اللازمة له ماامكن •

شاكرين لكم كريم تعاونكم ،،،،

وتفضلوا بقبول اطيب تحياتي،،،

مدير ادارة البعثات

محمد عمر بن تاج الدين جاوى

ع٢٥-٣-١٤

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز

ادارة البعثات

الرقم ‏‏ ١٢١٨٩٩ ‏ ع

التاريخ ‏ ‏١٤٠٠/٣/١ هـ

المرفقات ....

سعادة مدير الشركة الوطنية للاسمدة الكيماوية ‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏‏ المحترم

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة
للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من
الشركة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض .

نرجو التكرم بتقديم المساعدة اللازمة له ما امكن .

شاكرين لكم كريم تعاونكم ،،،،

وتفضلوا بقبول اطيب تحياتـــي،،،

مديــر ادارة البعثــــات

محمد عمر بن تاج الدين جاوى

ع٢٥-٣-١٤

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز

ادارة البعثات

الرقم ....

التاريخ ....

المرفقات ....

سعادة مدير الشركة العربية للبتروكيماويات   المحترم

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من الشركة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض .

نرجو التكرم بتقديم المساعدة اللازمة له مأمكن .

شاكرين لكم كريم تعاونكم ،،،،

وتفضلوا بقبول اطيب تحياتي،،،

مدير ادارة البعثات

محمد عمر بن تاج الدين جاوى

ع25-3-11

Date	التاريخ : ١٤١١/٦/٢٧هـ ، ١٣/ ١/ ١٩٩١م
Our ref	رقم : ش ج

الاخ الكريم الاستاذ / فهد أدهم   المحترم
جامعة درهام
انجلترا

<u>الموضوع : استبيانات كبار الموظفين اليابانيين</u>

السلام عليكم ورحمة الله وبركاته :

نرفق لكم من طيه ثلاث اجابات وصلتنا من الموظفين اليابانيين العاملين فى الشركة الشرقية للبتروكيماويات (شرق) حتى تاريخ ١٩٩١/١/١٢م.

نأمل ان تفى بالمطلوب ، مع اخلص تمنياتنا لكم بالتوفيق.

وتقبلوا اطيب تحياتى ،،،،

رئيس قسم العلاقات العامة
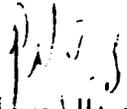
غازي عبدالرحيم آل ابراهيم

<u>مرفق : (٣) استبيانات</u>

390

INTER-OFFICE MEMO

مـذكـرة داخـلـيــة

To: MR., F. AL-DOSSARY Engineer II MTC Inst.	الى :	Date: OCT.23,1990	التاريخ :
		Our Ref:	الرقـــم :
From: OMAR FELIMBAN, PR SECTION	من :	Distribution: Mr Ghazi Al Ibrahim	التوزيع :

Subject :   الموضـوع :

The enclosed questionnaire came from Mr Fahd Adham of King Abdul Aziz

University Research Programme, for his Ph.D. study at Durham University,

Business School.

Please fill out the questionaire and return it to PR Section as soon

possible.

Best regards

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز

ادارة البعثات

الرقم ....٩..........سبغ

التاريخ .....٢٣١١١١١..../٣/ هـ

المرفقات ....

سعادة مدير الشركة الوطنية للغازات الصناعية   المحترم

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من الشركة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض •

نرجو التكرم بتقديم المساعدة اللازمة له مامكن •

شاكرين لكم كريم تعاونكم ،،،،

وتفضلوا بقبول اطيب تحياتـــي،،،

مديــر ادارة البعثــــات

محمد عمر بن تاج الدين جاوى

ع٢٥-٣-١٢

INGDOM OF SAUDI ARABIA

Ministry of Higher Education

IING ABDULAZIZ UNIVERSITY

Scholarships Department

Ref. ....

Date ....

Encl. ....

المملكة العربية السعودية

وزارة التعليم العالي

جامعة الملك عبد العزيز

ادارة البعثات

الرقم ....

التاريخ ....

المرفقات ....

سعادة مدير ابن سينـــا

المحترم

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من الشركة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض •

نرجو التكرم بتقديم المساعدة اللازمة له ملامكن •

شاكرين لكم كريم تعاونكم ،،،،

وتفضلوا بقبول اطيب تحياتــي،،،

مديــر ادارة البعثــــات

محمد عمر بن تاج الدين جاوى

٢٥-٢-٩ع

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز

ادارة البعثات

الرقم ـــــــ ١٠١٠١٥٥سبح
التاريخ ـــــــ ٢٥/٣/١٠
المرفقات ـــــــ

سعادة مدير شركة ابن حيان   المحترم

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من الشركة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض .

نرجو التكرم بتقديم المساعدة اللازمة له مامكن .

شاكرين لكم كريم تعاونكم ،،،،

وتفضلوا بقبول اطيب تحياتـــي،،،

مديــر ادارة البعثـــــات

محمد عمر بن تاج الدين جاوى

ع٢٥-٣-١٠

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك عبد العزيز

ادارة البعثات

الرقم ....

التاريخ ....

المرفقات ....

المحترم

سعادة مدير ابن زهـــر

السلام عليكم ورحمة الله وبركاته ،،،،

نفيدكم بأن مبعوث الجامعة السيد/فهد بن صالح ادهم المبتعث الى المملكة المتحدة للحصول على درجة الدكتوراه في تخصص ادارة الانتاج يرغب الحصول على بعض المعلومات من الشركة تتعلق ببحثه ، ونظرا لأنه في رحلة علمية للمملكة لهذا الغرض .

نرجو التكرم بتقديم المساعدة اللازمة له ماامكن .

شاكرين لكم كريم تعاونكم ،،،،

وتفضلوا بقبول اطيب تحياتــــي،،،

مديــــر ادارة البعثـــــات

محمد عمر بن تاج الدين جاو

ع٢٥-٢-٩

بسم الله الرحمن الرحيم

إلى نقاط التفتيش
المعتمدة الـ...

... سعادة المحاضر فهد بن صالح ... أحد المحاضرين الملتحقين لدرجة الدكتوراه إدارة الأعمال سوف يقوم ببحث عن إدارة الإنتاج في المصانع بمنطقة الجبيل الصناعية

والسلام عليكم

محمد

عبد الرحمن الحكم
في مدينة الجبيل من البحرين
الأحد ٢٢/٥/١٤١١هـ