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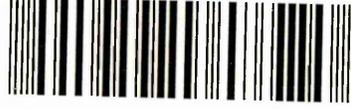
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**QUALITY STRATEGY OF
SMALL BUSINESSES IN HONG KONG**

YUK LAN WONG

A thesis submitted in partial fulfillment of the
requirements of
Sheffield Hallam University
for the degree of Master of Philosophy

February 1995

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QUALITY STRATEGY OF SMALL BUSINESSES IN HONG KONG

ABSTRACT

TQM has been widely recognized and successfully implemented in many large enterprises, giving these businesses the edge in both international and local competitiveness through the production of quality products that delight the customer. The thesis serves to lay the foundation for investigating quality strategy of small businesses in Hong Kong, many of which do not have the same management capabilities, incentives and resources as do large businesses.

The results, in general, indicate that the enforcement of total quality management (TQM) in these small business concerns has been dissatisfactory. On the whole, enthusiasm was found among them, but there were inadequate and misunderstanding of the TQM concept. However, there are several small wonders who was on the route to total quality management and their lessons of "best practices" is discussed. Recommendation is drawn on the kind of quality strategies small-sized companies may adopt in pursuing their competitive edge.

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CHAPTER ONE INTRODUCTION

1.1 BACKGROUND

The decade of 1990's has been characterized by extended intensive global competition in both products and resources markets.

Companies are finding it harder and harder to survive their problems. It seems that the traditional management philosophy no longer works well in today's global environmental context, it gradually becomes obsolete. In order to stay competitive and profitable, companies are forced to explore better means to secure the market, to reduce unnecessary costs, and to improve the productivity of the existing factors input (Kanji 1990).

Total Quality Management (TQM) is an innovative management philosophy and set of guiding principles required by any organization striving for continuous victories and excellence. The total quality management philosophy advocates the total involvement of all participants in the quality process which positively encourages continuous quality improvement to meet customer expectations through the cultivation of a new organizational culture and the establishment of a more efficient network system incorporating the suppliers (Wong 1993).

Unlike the traditional management philosophy, this new management philosophy is customer driven. The basic focus of which is the same for both service and product-oriented organizations: total customer satisfaction. Companies now have to make it their business to get and stay close to their

customers. Keeping customers happy and satisfied has become the central aim of successful companies all over the world (Kanji & Asher 1993). Through TQM, management can gain invaluable insights into better ways of organizing their limited resources in realizing the Deming's Chain Reactions. Further, it is widely accepted as an indispensable component of competitiveness of an economy .

Against a background of rising production costs, a tight supply of labour and increasing competition from other Asian countries, Hong Kong companies must strive to upgrade the quality of their products if they are to remain competitive and retain their market share. The 1990's will be an era of challenges for Hong Kong small businesses. The main features of the Hong Kong situation are as follows:

- . There are more competitors than ever before
- . National and international financial systems are unpredictable
- . Investor's expectations have increased
- . Customers' expectations are escalating
- . The things people value are changing
- . The international standard for quality management has been introduced
(The international standard for quality assurance-ISO9000)

Source: Hong Kong Annual Report 1993

In wake of these changes in situation, the Hong Kong Government has launched a series of "Make it Better in Hong Kong" Quality Awareness

Campaign which aims to encourage enterprises throughout Hong Kong to adopt effective Quality management practices.

The Industry Department plays an important role in providing quality support services and promoting the wider application of quality assurance. Services include the maintenance of measurement and documented standards as authoritative points of reference for industry through the Standard & Calibration Laboratory (SCL), and the provision of information on external product standards through the Product Standards Information Bureau (PSIB). It also operates a laboratory accreditation scheme (HOKLAS), which was introduced in 1985 to encourage commercial testing laboratories in Hong Kong to seek accreditation to international quality standards. In 1990 a three-year long Quality Awareness Campaign was launched, and a series of seminars and briefings, focusing on the recognized international standard of ISO9000 and total quality management (TQM) were offered. Another achievement of the campaign was the establishment of a Hong Kong Quality Assurance Agency (HKQAA) in early 1990, to assess and accredit companies practicing quality assurance to ISO9000 and Total Quality Management. Besides, the Government has also set up the Governor's Award for Industry (Quality) and a lot of quality infrastructure to promote a wider appreciation of the quality management amongst Hong Kong companies.

1.2 MOTIVATION FOR RESEARCH

Not surprisingly, the concept and pursuit of "Quality" has moved in step with improvement in the standard of living. With greater affluence in society, people have become more quality conscious in their business activities as

well as in their own demands for goods and services. "Total Quality Management" being the most popularized and practical quality management philosophy is now sweeping every business sector of Hong Kong (Sit & Wong 1989). It is also being accepted as a sound practice that Hong Kong's companies must master, if they are to continue to prosper in the fiercely competitive years ahead, with good reason. TQM offers a holistic and systematic approach towards removing unnecessary and costly waste, locating and eradicating sources of error, and providing the customer with reliable products that they actually want (Kanji 1990). Besides, it makes people's works more meaningful.

All of these benefits reflect the need for every Hong Kong companies to accept this quality challenge by pursuing TQM as a business strategy, developing sound working relationships based on quality consideration with suppliers and subcontractors.

Unlike many traditional management models, total quality management can't be implemented in isolation. Rather, the successful implementation of TQM calls for the full involvement and cooperation of all participants including a network of suppliers and vendors. Like many other economies, small business in Hong Kong are predominate and play major role of subcontracting . In fact, these small subcontractors are long known for their significant contribution to the Hong Kong economy, using their ability to respond to the changing market needs, and efficient assembly work.

Because of their importance to people and the Hong Kong economy, small business concerns need to survive-and survival is on the minds of many

owner/managers and leaders of small enterprises. Since the management of quality as a strategic tool has to be assimilated differently by different types of firm, small business concerns, as part of the quality chain, therefore deserve emphasis and attention on their quality strategies as a means to achieve competitive edge (Wong 1993).

1.3 PROBLEM DESCRIPTION

Despite having plenty government offices and public institutions in Hong Kong whose act as innovation centers in welcoming this popularized management philosophy, encouraging the spread of TQM, disseminating information, facilitating relationships and offering training; none of them promote and facilitate the efforts of small enterprises to take on this challenge.

To date, little literature, books and papers on TQM has been directed to small-sized companies, even though the diffusion and promotion of "best practice" in TQM among these small subcontractors is critical to the success of the larger TQM practitioners.

However, one must note that small-sized enterprises, due to their unique features, may adopt a somewhat different quality strategy in achieving competitiveness.

The main thrust of this thesis is to investigate the present quality strategy of such small business in Hong Kong in order to develop total quality management process in a systematic way.

1.4 OBJECTIVE

As mentioned earlier, there is still no documented literature concerning the area of quality strategy of small enterprises in Hong Kong. However, due to the different operating environment and operating scale, it is inferred that small businesses owner/managers might have different perceptions of quality and employ different sets of quality strategy to pursue their competitive edge when comparing with the CEOs in big businesses. For small businesses, introducing quality programmes can be a lonely and expensive business. Some can afford the services of outside consultants; most cannot. Help is needed.

In view of the lack of investigative work in this area and the importance of economic contribution of Hong Kong's small business, this research focuses on the role of quality strategy in that sector as a factor for achieving their competitive edge. Specifically, it is endeavoured to address and examine the following questions throughout the research.

1. Are small firms any less advanced in their progress towards TQM?
2. Are their perceptions of quality, as a competitive factor, any different among various types of small firms?
3. Are there any practical implications of these varying perceptions in their quality strategy implementation?

4. Are there any lessons of "best practice" that could be passed on to this group of organizations?

1.5 THE RESEARCH METHODOLOGY

Introduction

In Hong Kong, the manufacturing sector has been a major contributor to its overall economic success for the past thirty-five years. Manufacturing alone approximately accounts for one-third of its employment. It includes clothing electronics textiles and plastics, printing and chemicals and is dominated by medium and small sized firms with an average establishment of 16 persons. Further reports indicate that about 84.3% of industrial establishments in Hong Kong each employ less than 20 people (Kanji 1990).

Small business in Hong Kong has long been known for its flexibility and effective consumer orientation that plays an important role in the prosperity of the local economy.

Recently, with ever-accelerating inflation and manufacturing moving over the border into the adjacent Pearl River Delta region, Hong Kong manufacturing is now undergoing a restructuring process that they must move their competitive battleground from price to quality (Wong 1993).

Noting the preponderance of small business in Hong Kong and their special subcontracting relationship with their local larger counterparts, the quality strategies of such businesses and their awareness of the importance of

quality in improving the competitiveness of the local economy engender a fresh interest.

The Research Method

As survey method allows one to obtain both qualitative and quantitative data from a relatively larger sample more efficiently, both mail survey and semi-structured personal interviews were considered more appropriate and were adopted for the collection of information regarding the methods and principles of quality management used in Hong Kong small businesses.

Apart from the self-estimation by the owner/manager, interviewer may also take notes during the interview provides an added advantage of using this method. However, the results may sometimes be disappointing too. For an owner/manager is not a researcher, and his ability to translate complex reality into meaningful abstraction in a short period of time is somewhat doubtful. Nevertheless, Henry Mintzberg, one of the most famous management theorist, commented that this technique is most useful in the study of owner/manager's perception of his own work (Drucker 1992).

Despite the advantages of the survey method in generating quantitative data, there is a need to be cautious in applying the method. Firstly, the survey method should be developed such that it is consistently interpreted by the respondents. Secondly, the sampling procedure should be directly related to the research problem. Lastly, the method employed should generate interest among the potential respondents to obtain a more comprehensive responses result.

Development of Survey

The survey used a semi-structured interview based on a questionnaire. The questionnaire was developed in 1992 based on the research model and the specific quality management measurement items advised and determined by Professor Dahlgaard, Kanji & Kristensen (1990). As the present research is the first TQM survey ever conducted on small businesses in Hong Kong, the questionnaire was pretested on two owner-managers, one from printing firm and other from chemical firm. Generous cooperation and valuable advice were received on ease of comprehension and clarity of the specific items. In November 1992, the revised final form of the questionnaire was prepared in Chinese to suit small business and local environment (Appendix C). Details regarding the rationale for the structure of the questionnaire and the description of the questionnaire are given in Appendix A and B respectively.

In this survey, the goals and roles of quality strategy of small enterprises are evaluated in terms of a Total Quality Management framework incorporating two major TQM implementation aspects: customer-supplier relationship and the importance of the four core total quality management activities in this companies as indicated in the structure of the questionnaire in Appendix A.

Coverage of the Survey

As described in Chapter 2, there are many definitions of small business and there are many applicable measures which range from family ownership to company turnover. For our purpose, the author decide to adopt the definition which is developed by the Hong Kong Government Statistical Department. Accordingly, small business should be the enterprise that is managed in a personalized way and is employing less than 50 people. The survey covered a sample of 200 companies. They were selected by stratified random sampling method from a total of 23,409 companies (1990) with employment size less than 50 in that sector.

Method of Survey

In order to collect accurate data, the survey fieldwork was conducted in November - December 1992 by trained interviewers based on the largely pre-coded questionnaire. Two weeks before the fieldwork, questionnaires were mailed to the sampled companies and their owner-managers. It is difficult to conduct this kind of investigation among Hong Kong small business. Experiences of past small businesses surveys taken in Hong Kong show that the method of sending questionnaires to the targets yields a very low response rate which usually ranges form 0.1% to 3% only. In view of this and owing to the length of the questionnaire, the "direct-selling" technique was employed by the interviewers in data collection to gain meaningful results.

During the fieldwork period, four trained interviewers using the "Hong Kong Guide maps" went to the five industrial districts namely, Tsuen Wan, Kwai Chung, Kwun Tong, Quarry Bay and Aberdeen and started the prospecting process. Description of their work schedule which is developed base on the direct selling concept to reach and collect information from the small business is shown in Appendix D. The reason for restricting the sample frame to the five industrial districts is base on the fact that these five industrial districts together accommodated 96.8% of the Hong Kong's small and medium size establishments in 1990.

Response Rate

Owing to the reasons of time-consuming process of completing the questionnaire; the problem of confidentiality in the trade; the expected fluctuation of operation environment that make the owner/managers unavailable and out of contact in the fieldwork process, there are only 44 responded out of the 200 sampled companies.

As predicted, we received only 6 completed questionnaires from the mails. Some companies were either not applicable, moved, closed down or merged with other companies. Some companies did not answer sufficient numbers of questions to give an overall picture about the owner-managers and their companies. While 38 interviews were successfully approached and conducted by the trained interviewers using the "direct selling" technique. Out of the 38 interviews, nearly all owner-managers of these responding companies answered questions and provide information about their personal profiles and

their companies. These two together gives a response rate of 22%. The data obtained have been grossed up to give an overall picture of perception on quality strategy of owner-managers, the role of quality strategies in small business and their implications in strategic implementation of total quality management. The distribution of responding companies and by types of business is shown in Table 1.1.

TABLE 1.1
RESPONSE BREAKDOWN

Industry	No. of Firms	% of Total Samples (200)
Garment/Clothing	14	7%
Electronic	2	1%
Chemical	4	2%
Metal	7	4%
Moulding	9	5%
Printing	8	4%
TOTAL	44	22%

The detailed analysis of data with respect to Kanji & Asher's (1993) "Pyramid principles of Total Quality Management" is discussed in Chapter 5.

CHAPTER TWO ROLE OF SMALL BUSINESS

2.1 SMALL BUSINESS TODAY

There is no question that entrepreneurs and the small businesses they own and operate are an exciting part of every economy.

In most developed economies anything from 6% to 15% of the working population are small business men and women. This can be translated into about 3.4 million people in the United Kingdom, out of a working population of 27 million (Bygrave 1994). That is to say, almost half of all the people in commercial and industrial employment in the U.K. work in a small business.

It is also not a surprise to note that 98% of the United States business are small scale. In France, over 90% of all businesses are small and medium-sized enterprises. In Italy, 90% of all industrial firms are small businesses and absorb almost 84% of her total employment. Similar to the Western World, 90% (on average) of Asian developing countries' business establishments also belong to small scale (Chou & Tuan 1993).

In fact, small business flourished in almost all ancient cultures. The Egyptians, Greeks, Jews, Arabs, Romans and Babylonians, for example, all contained a substantial population of small businesses (Bolton 1972).

However, small business history, until recent years, has never excited the public at large. Although small businesses are now generally being increasingly recognized as an integrated component of every economy, they

remain overshadowed by those of the big businesses such as Toyota, General Motors, British Airways, Shell and Swire etc.

Yet, one should not overlook the contributions of small business. Small businesses operate in all parts of our economy. From what is happening around us, you can tell that small business has an important impact on our daily lives. The newspaper we buy, food we eat, shirt we wear, transport we take, in most of the cases will be produced, processed and delivered by the small businesses. The smaller enterprises are major job creators and are essential in all economies in providing much needed daily consumable for the local populaces. Besides, small businesses are known to generate and provide training grounds for entrepreneurs. The fact that the development of small businesses allows for the more effective utilization of local raw materials and resources, offers much of the needed daily products to act as major import substitutes are another interesting points to note. Another area of interest is that of the intimate relationship between the small enterprises and the larger enterprises.

Recently, there have been a major resurgence of small business throughout the world. Even in the Soviet Union and Eastern Europe, such enterprises are now greatly prized (Bolton 1972). Focus now has been turned to enterprises with a smaller work force as these enterprises produce higher value-added exports than giants in today's competitive environment, particularly in countries where unemployment is prevalent like the United States.

2.2 ROLE OF SMALL BUSINESS IN HONG KONG

Hong Kong is a subgroup of the Newly Industrialized Countries (NICs). Hong Kong's manufacturing industries were of only local importance until some years after the Second World War. The early industries were the natural offshoots of Hong Kong's previous prosperity as a trading port.

Having a high degree of dynamism and intensive activity generated by a large pool of emigrated independent businessmen from the post World War II mainland China, and a culture and infrastructure that favours free trade and easy access to foreign markets, make Hong Kong a bastion of entrepreneurship and small businesses.

From the past to present, small and medium firms almost predominate in Hong Kong's manufacturing industries. They represent and form the backbone of Hong Kong export-oriented economy.

Despite having similar domestic and external environmental factors, small enterprises in Hong Kong, as compared to those in other Asian countries, are quite unique in several respects.

First and foremost, almost all manufacturing firms here are export-oriented and they are highly integrated among themselves and with the large enterprises through a system of subcontracting. For instance, the textiles and clothing industries combined is the largest export earner, accounting for 40% of total domestic exports in 1992 (Chou & Tuan 1993).

In fact, these subcontracting practices of small and medium enterprises are highly efficient, flexible and adaptive to the fluctuating product design and demand, which to a large extent, make Hong Kong the world largest exporter of the light industrial products. As Sit and Wong (1989) reported that most of the large companies in Hong Kong have subcontracting relationships with the small firms which are in fact the subcontractors (SCR).

Secondly, most of these small manufacturing factories are concentrated in producing those highly competitive products like textiles and wearing apparel, toys and watches. There are some larger sectors of industry like textiles, garments and electronics in Hong Kong which employed more people but still they were all small operation. In accordance to the Hong Kong statistics, Hong Kong's main manufacturing industries, by export value, are clothing, electronics, textiles, watches ad clocks, and plastics. These industries together exported \$177,345 million worth of goods that is 75.7% of total domestic exports in 1992. They also accounted for \$208,890 million (64.4%) of the total gross output of the manufacturing sector in 1991 (Wong 1993).

Another distinctive feature of small business in Hong Kong is the size. Small business defies easy working definition. The working definition for the size sectors varies from industry to industry, from country to country, depending on the yardstick and cut-off point used. The most widely used and widely criticized definitions based on employment.

Besides, the cut-off points between the size sectors in terms of number of full-time employees is not uniform among countries neither. The most

notable difference is found in the size criteria adopted for the sectors between the developing and developed countries. (Table 2.1)

TABLE 2.1

SIZE CRITERIA FOR SELECTED DEVELOPING AND DEVELOPED COUNTRIES

Cut-off Point in Persons Employed				
Size Sector	U.S.	Japan	Malaysia	Indonesia
Small	0 - 49	< 100	< 50	< 20
Medium	50 - 249	100 - 299	50 - 199	20 - 99
Large	250 - 400	> 300	> 200	> 100

Source: Hong Kong Annual Report 1993

Generally speaking, the yardstick and cut-off point adopted reflects the nature and stages of industrial development in the economy of the region.

Noting the light manufacturing nature of Hong Kong industries, the size definition adopted by the Hong Kong Government in its recent business classification survey is used in this dissertation. The definitions of size sectors by industry in Hong Kong is shown in Table 2.2

TABLE 2.2
SIZE DEFINITIONS FOR SELECTED ECONOMIC SECTORS IN HONG KONG

Cut-off Point in Persons Employed

Category	Small	Small-Medium	Large
Manufacturing	1 - 19	20 - 99	> 500
Import & Export	< 5	5 - 19	> 50
Wholesale	< 5	5 - 19	> 50
Retail	< 5	5 - 19	> 50

Source: Hong Kong Trade Development Council Annual Report 1991

Table 2.3 shows the percentage of small business establishment by major economic sectors in Hong Kong (1991).

TABLE 2.3
PERCENTAGE OF SMALL BUSINESS ESTABLISHMENTS BY MAJOR ECONOMIC SECTORS

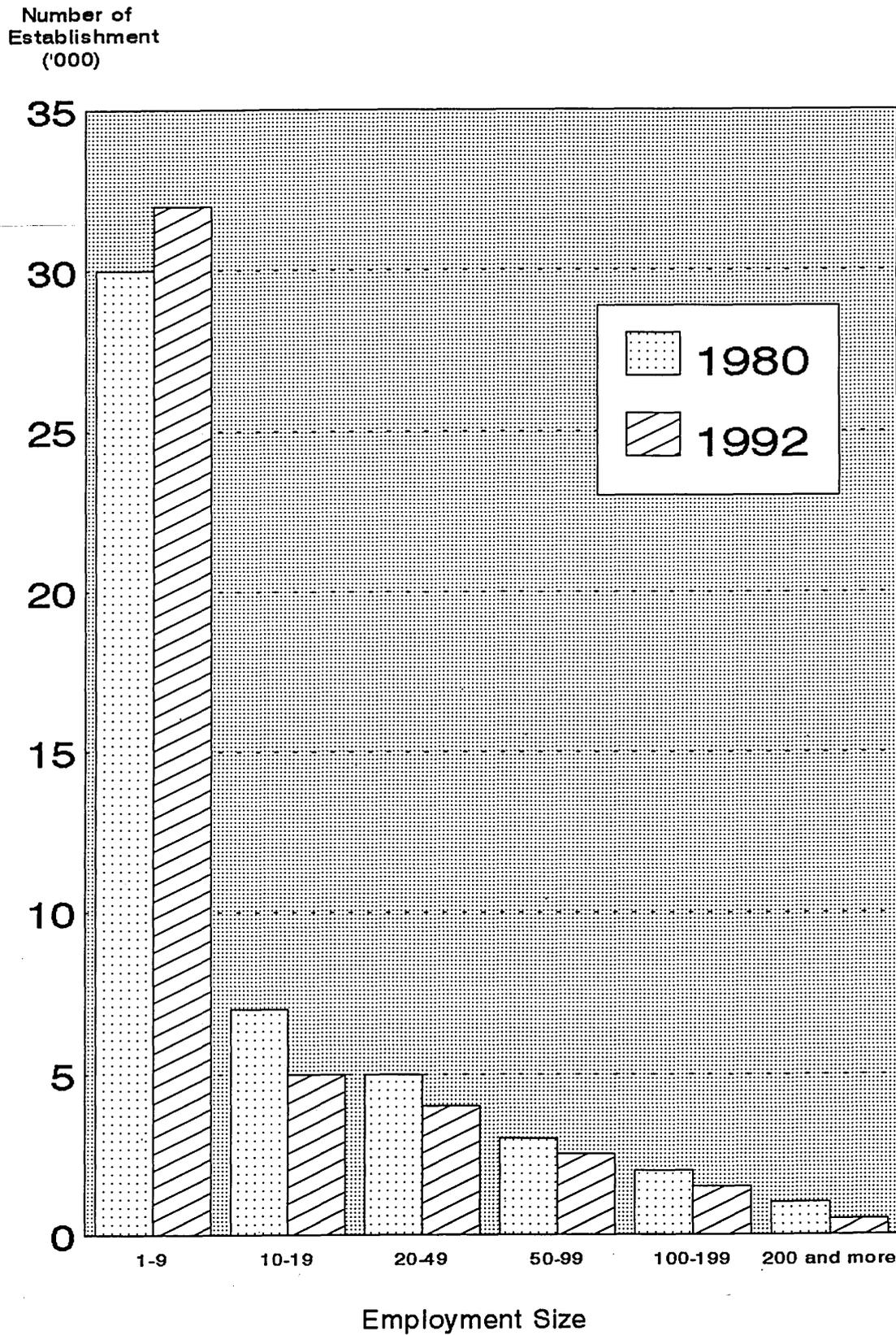
Economic Sector	Small	Small-Medium	Large
Manufacturing	84.1	15.7	0.2
Import-Export	68	30.9	1.1
Retail	84.2	15.4	0.4
Wholesale	71.7	27.9	0.4
Restaurants	47.9	47.9	4.2
Hotels	88.9	10.3	0.8
Finance	77.5	18.5	4.0
Business Services	87.5	10.2	2.3
Transportation	86.2	12.9	0.9

Source: Hong Kong Productivity Centre Annual Report 1993

Besides, more than 98 per cent of Hong Kong manufacturing enterprises belong to small scale. (Figure 1).

FIGURE 1

NUMBER OF MANUFACTURING ESTABLISHMENTS BY EMPLOYMENT SIZE, 1980 AND 1992



Source : Reports of Employment, Vacancies and Payroll Statistics, Census & Statistics Department

TABLE 2.4
NUMBER OF MANUFACTURING ESTABLISHMENTS BY
EMPLOYMENT SIZE, 1987-1992

Size of Establishment (No. of Persons Engaged)	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
1 - 9	34 354 (68.2)	35 066 (69.3)	34 802 (69.7)	35 915 (73.2)	33 888 (73.2)	31 261 (74.5)
10 - 19	7 241 (14.4)	7 219 (14.3)	7 270 (14.6)	6 366 (13.0)	5 980 (12.9)	5 120 (12.2)
20 - 49	5 336 (10.6)	5 032 (9.9)	4 735 (9.5)	4 219 (8.6)	4 018 (8.7)	3 501 (8.3)
50 - 99	2 090 (4.1)	1 977 (3.9)	1 919 (3.8)	1 520 (3.1)	1 430 (3.1)	1 221 (2.9)
100 - 199	869 (1.7)	828 (1.6)	741 (1.5)	668 (1.4)	602 (1.3)	524 (1.2)
200 - 499	387 (0.8)	356 (0.7)	346 (0.7)	302 (0.6)	284 (0.6)	249 (0.6)
500 - 999	104 (0.2)	105 (0.2)	88 (0.2)	77 (0.2)	56 (0.1)	45 (0.1)
1 000 and above	28 (0.1)	23 (*)	26 (0.1)	20 (*)	18 (*)	17 (*)
Total	50 409 (100.0)	50 606 (100.0)	49 926 (100.0)	49 087 (100.0)	46 276 (100.0)	41 937 (100.0)

Note : Figures in brackets denote the respective percentage share of the column total.

Source : Reports of Employment, Vacancies and Payroll Statistics, Census & Statistics Department.

It is also indicated in Table 2.4 that the small, and small-medium business sectors are sizable parts of Hong Kong's manufacturing structure (with 41,103 establishments) and therefore, the way it may perform should significantly affect the entire Hong Kong economy.

These survival of these small enterprises and to sustained their growth is a necessary factor for the development of the big businesses. In general, big businesses do not allow for dynamics of economy, flexibility and effective consumer orientation, therefore, it is necessary to have an indispensable extensive network of small businesses in Hong Kong.

Hence, the development of small businesses makes it possible for Hong Kong to enjoy both the advantage of resource concentration within narrow areas of the latest technology and the advantage of rapid production adaptation to the changing market conditions.

All in all, small business in Hong Kong, despite of all the publicity about multinational cooperation and mega billion-dollar conglomerates, make up a significant proportion of the local economic sector and therefore their crucial role in Hong Kong is self-evident.

2.3 RECENT CHANGES AND FUTURE PROSPECTS OF SMALL BUSINESS IN HONG KONG

Being a small and open economy, Hong Kong will always be sensitive to any changes in the international, political and economics scene which affects trading conditions, on shifts in market and product demands.

For the past five years in particular, we can find that tremendous changes have been taken place in the colony which may help to underwrite the territory's future. While some of these changes are favourable, some are quite threatening.

First of all was the economic development in China. Hong Kong as an economic entity is now irretrievably tied to the fortunes of the mainland economy, as Hong Kong plays a key role in providing some of the expertise needed in the China's pursuit of economic reforms.

In the case of small business, many Hong Kong managers, in the recognition of the great potential of China's markets, have gone into China. They relocate their businesses to the Mainland and left their headquarters in Hong Kong. That is to say, most of these companies' operations here are now becoming more like headquarters units only (Sit & Wong 1989).

The relocation of these manufacturing plants to China, of course, has had some impacts on Hong Kong, such as an imbalance in the labour market and made Hong Kong more reliant on China for domestic as well as re-export growth. But overall Hong Kong has emerged a beneficiary from the economic restructuring. For example, the manufacturing companies with headquarters in Hong Kong and producing in China is now much more interested and has more funds available for product design than it used to. Moreover, a very strong trend in these companies is toward product development.

Compared with ten years ago, Hong Kong industrialists are now much nearer an earlier stage of the product life cycle than before when they could only take up the manufacture of a product close to maturity and may be even in its decline stage. In fact, Hong Kong manufacturing is moving toward and becoming much more development-oriented in terms of both process and product development. Examples can be found in the Hong Kong electronics industry; an industry that is in one of its fastest growth periods and where most of the interest is in telecommunication products. They are now largely involved and engaged in the design of products like cordless telephones and of pagers. The whole area is moving from analogue to digital technology.

Another change has also taken place in Hong Kong which indicates that the businesses with a smaller work force is producing value-added exports with a higher value than five years ago. Workers' wages in manufacturing are improving faster than in the services. This brings manufacturers on to a problem of high labour costs and high production costs. Recent statistics even show that labour costs in the manufacturing industries accounting for 57.3 percent (Table 2.5) of the value-added of the sector in 1991, was higher than most of other sectors (Figure 2).

**TABLE 2.5 LABOUR COST AS PERCENTAGE OF VALUE
ADDED OF MAJOR ECONOMIC SECTORS, 1991**

Economic Sector	Value Added (in HK\$ Million)	Gross Output (in HK\$ Million)	Value Added as % of Gross Output
Manufacturing	53,076	92,693	57.3
Wholesale retail and import/ export trades, restaurants and hotels	81,759	155,616	52.5
Financing, insurance, real estate and business services	46,477	138,733	33.5
Community, social and personal services	80,487	95,790	84.0
Transport, storage and communication	25,903	57,746	44.9

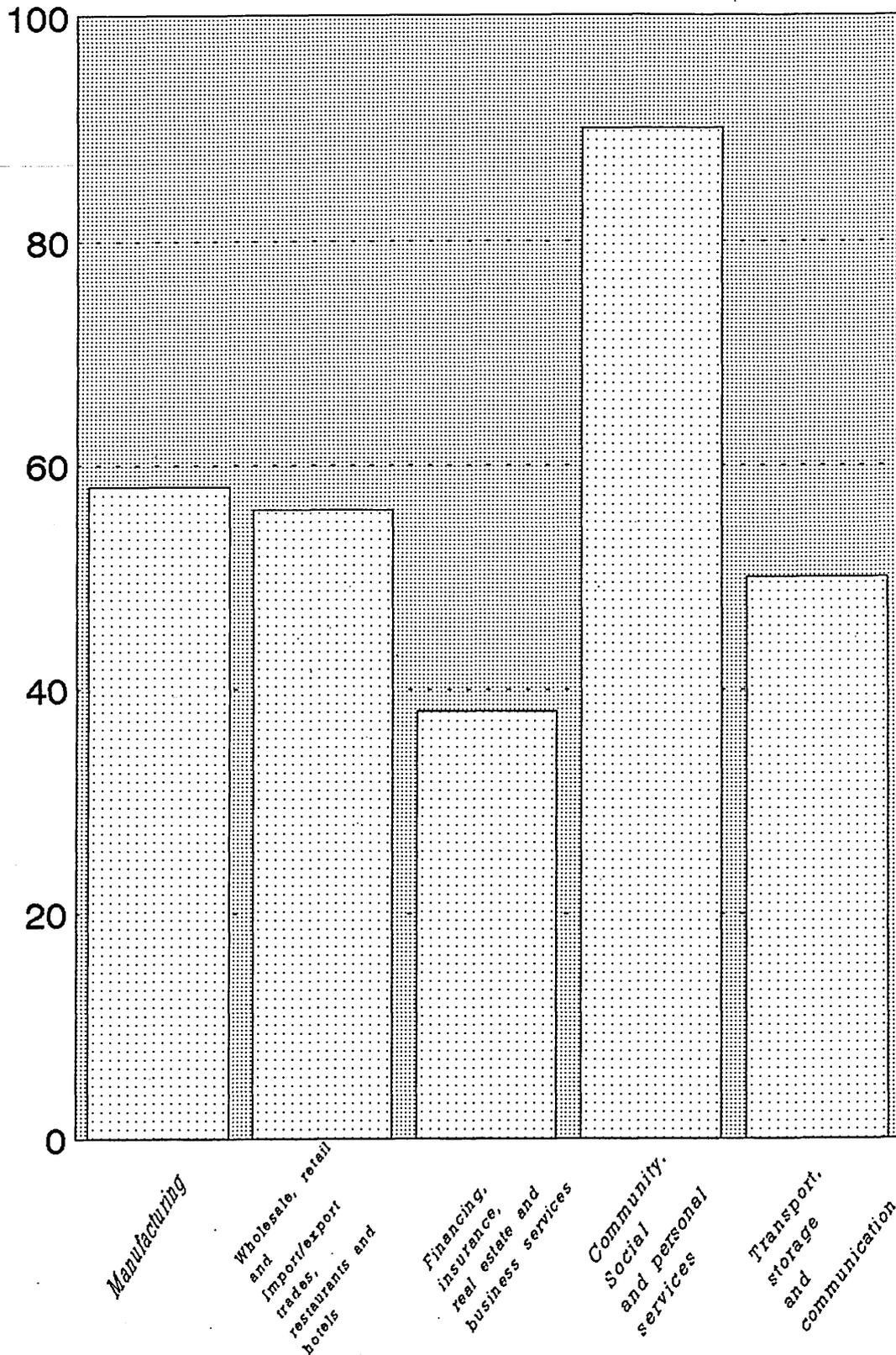
Note : * Provisional estimates

Source : National Income Branch, Census & Statistics Department.

Figure 2

Labour Costs as Percentage of Value Added of Major Economic Sectors, 1991*

Percent



Note : * Provisional estimates

Sources : National Income Branch, Census & Statistics Department

The high cost of business in Hong Kong coupled with rapid changes in consumer demand and an increasingly fragmented consumer product market will exert competitive pressure on Hong Kong managers in stimulating quality and productivity growth. By the same token, all these have made quality, flexibility, responsiveness and customer service increasingly important.

The future prosperity of Hong Kong's small businesses will require continuous product upgrading and market diversification. Industries must achieve a technological level which will enable them to move into high value added and innovative merchandise. Otherwise, they will not, in the long run, be able to compete successfully against the lower-cost producers in developing Asian and South East Asian economies, on against the other newly industrialized economies in more technologically-advanced manufacturing production. That is to say, the manufacturing sector must adopt total quality management (TQM) in order to maintain Hong Kong's competitive edge.

Unlike other strategic tool, total quality management requires the total involvement of all participants in the quality supplying process in making continuous improvement to meet customers' escalating expectations through the establishment of a new organization culture and an extended system incorporating the suppliers. This means TQM cannot be implemented in isolation. As such, big businesses must develop total quality management programmes not just in their own companies, but also assimilate these quality programmes into, and work hand-in-hand with, the smaller ones to achieve the full quality management effects.

This kind of cooperation is especially crucial to the successful implementation of TQM as a strategic tool in Hong Kong since Hong Kong's industries mainly consist of small and medium-sized enterprises.

Recently, owing to increasing automation and the shift of labour-intensive and lower-end production to China, the average size of industrial establishments has dropped from 18 persons in 1985 to 14 persons in 1992 (Table 2.6). Of the 41,937 industrial establishments in 1992, 36,381 establishments (86.8%) employed fewer than 20 persons and 39,882 (95.1%) of the establishments employed fewer than 50 persons (Figure 1). Moreover, many small operations in Hong Kong are closely linked with the bigger factories through an efficient network of subcontracting processing arrangements.

TABLE 2.6

NUMBER OF ESTABLISHMENTS AND PERSONS ENGAGED IN
MANUFACTURING INDUSTRIES, 1950-1992

<u>Year</u>	<u>No of Establishments</u>	<u>No. of Persons Engaged</u>	<u>Average No. of Persons Engaged Per Establishment</u>
1950	1 478	81 718	55
1955	2 437	110 574	45
1960	5 346	218 405	41
1965	8 646	341 094	39
1970	16 507	549 178	33
1975	31 034	678 857	22
1980	45 409	892 140	20
1985	48 065	848 900	18
1986	48 623	869 753	18
1987	50 409	875 250	17
1988	50 606	844 575	17
1989	49 926	802 983	16
1990	49 087	750 217	15
1991	46 276	654 662	14
1992	41 937	571 181	14

Sources : (1) Figures for 1950 to 1970 from Employment Statistics, Labour Department.

(2) Figure for 1975 onwards from Reports of Employment, Vacancies and Payroll Statistics, Census & Statistics Department.

As a result, large companies need to diffuse and spread TQM among their small subcontractors (SCR) and raise their awareness of the importance of quality in improving the competitiveness of the local industry in order to be assured of receiving quality supplies and services from these small suppliers.

These small subcontractors being part of the quality chain (Juran 1988) must be incorporated in total quality management process. As such the role of quality strategies of small business in Hong Kong engenders a fresh interest and is the focus of this dissertation.

CHAPTER THREE TOTAL QUALITY MANAGEMENT PRINCIPLES AND CORE CONCEPTS

3.1 HISTORICAL DEVELOPMENT OF QUALITY MANAGEMENT

The development of total quality as a management system began at the turn of this century. It evolved from a wide range of earlier management practices, manufacturing productivity enhancements and improvement efforts. Several quality leaders played key roles in the development, implementation, and dissemination of this important new approach to managing and transforming an organization into one capable of achieving victories. Their messages are relevant to the world industry and cover both the development of philosophy and tools. These tools include technical tools to control industrial design and manufacturing such as contributions of Dr. Ishikawa and Dr. Taguchi. They also include management tools to achieve quality such as the "Zero Defect" approach of Mr. Crosby and the concepts of "Company Wide" and "Total Quality Control" associated with Professor Ishikawa and Dr. Feigenbaum.

Deming's Conceptualization of TQM

Deming

Deming became known shortly after he was invited by the Union of Japanese Scientists and Engineers (JUSE) to Japan in 1950s to deliver a series of lectures on quality. He was highly credited by the Japanese due to his contribution towards the remarkable recovery of Japan from the devastation of the World War II.

Since then, the Japanese have aggressively pursued the idea of quality improvement. Deming's famous book *"Out of the Crisis"* which shows the "Deming Chain Reaction" also played a major role in the Japanese's focus on quality and made quality improvement (Kaizen, in Japanese) a vision for everyone in Japan (Deming 1986).

Description of Deming's Ideas

Deming has succinctly summarized his quality management experience and concepts in a series of fourteen points and seven deadly diseases. (Table 3.1)

TABLE 3.1

DEMING'S MANAGEMENT PRINCIPLES

7 Deadly Diseases

1. Lack of constancy of purpose
 2. Emphasis on short-term profits
 3. Evaluation of performance, merit rating, or annual review
 4. Mobility of management
 5. Management by use of visible figures
 6. Excessive medical costs
 7. Excessive costs of liability
-

1. Create and publish to all employees a statement of the aims and purposes of the company or other organization. The management must demonstrate constantly their commitment to this statement.
 2. Learn the new philosophy, top management and everybody.
 3. Understand the purpose of inspection, for improvement of processes and reduction of cost.
 4. End the practice of awarding business on the basis of price tag alone.
 5. Improve constantly and forever the system of production and service.
 6. Institute training (for skills).
 7. Teach and institute leadership.
 8. Drive out fear. Create trust. Create a climate for innovation.
 9. Optimize toward the aims and purposes of the company the efforts of teams, groups, staff areas, too.
 10. Eliminate exhortations for the workforce.
 11. (a) Eliminate numerical quotas for production. Instead, learn and institute methods for improvement.
(b) Eliminate M.B.O. (management by objectives). Instead, learn capabilities of processes, and how to improve them.
 12. Remove barriers that rob people of pride of workmanship.
 13. Encourage education and self-improvement for everyone.
 14. Take action to accomplish the transformation.
-

Source: Mary Walton, *The Deming Management Method* (New York: Dodd, Mead & Company, 1986), 34-36.

In the fourteen points, Deming indicated that quality is primarily the result of senior management actions and decisions and not the result of actions taken by workers (Walton 1986). Deming further stresses that it is the "system" of work that determines how work is performed and only managers can create the system. He thinks that managers play a crucial role in the allocation of resources, the provision of training to subordinates, the selection of equipment and tools, and in the maintenance of the plant and environment necessary to achieve quality. It is the senior managers who determine the kind of markets in which the firm will participate and what products or services will be sold.

On the other hand, the worker is mainly responsible for the resolution of those "special" problems caused by actions or events directly under his control. The management is responsible for the design and redesign of the system and the elimination of the "common" problems.

In brief, Deming attempts to separate the "common" from the "special" causes that contribute to the variation in product or service quality and thereby allocate correctly the task of improving quality between the management and the workers. He advocates and emphasizes, beyond doubt, the utilization of statistical quality control as he found that the statistical understanding of systems allows a more accurate diagnosis and solution of problems.

Specifically, Deming's fourteen points for quality management can be looked at in the context of total quality management (TQM). Ronald Snee (1986) has attempted to categorize Deming's work into a three component model of total quality management which encompass philosophy, management policies and procedures, and tools.

Out of these fourteen point, six were classified into the category of quality management philosophy, one in the category of tools, and the remaining eight into the category of management policies and procedures. (Table 3.2) To conclude, Deming suggests a single quality management process incorporating his fourteen points.

TABLE 3.2

DEMING'S TEACHINGS AND THE COMPONENTS TOTAL
QUALITY MANAGEMENT

Philosophy

- Constancy of purpose
- Adopt a new philosophy
- Find problems and improve the system
- Drive out fear
- Break down barriers between departments
- Remove barriers to hourly workers

Management policies and procedures

- Cease dependence on mass inspection
- End practice of buying from the lowest bidder
- Institute modern methods of on-the-job training
- institute modern methods of supervision
- Eliminate numerical goals
- Eliminate work standards
- Institute education and retraining programs
- Create management systems to do points previously mentioned

Tools

- Statistical process control
- As indicated in parentheses, Deming's 14 points have been divided into those which are philosophical and those related to management policies and procedures.

Source: E.W. Deming, Out of Crisis (Cambridge 1986)

Juran's Conceptualization of TQM

Juran

Juran was also familiar with Shewhart's work and was personally involved in applying Shewhart's statistical technique in the production of telephone equipment. His reputation as one of the top quality gurus perhaps rests on the publication in the 1950s of his massive book, *Quality Control Handbook* (Juran 1988) which is still the standard reference book on quality worldwide.

Similar to Deming's experience, Juran went to Japan to build on Deming's work shortly after publishing the book and was also involved in assisting the Japanese leaders in the restructuring of Japan's industries. He was able to help the Japanese to adapt the quality concepts and tools designed primarily for the factory into a series of concepts that would become the basis for an overall management process. His main message to Japanese managers was that quality control is an integral part of management at all levels, not just the work of specialists in quality control departments.

Description of Juran's Ideas

Juran (1988) considers quality management as three basic processes which is known as the Juran-trilogy: quality planning, quality control and quality improvement. He defines quality as "*fitness for use or purpose*" and argues for that definition instead of "*conformance to specification*". In Juran's view, a dangerous product could conform to all specifications but still be unfit for use.

Generally speaking, Juran's approach to managing for quality encompass:

1. Quality Planning - the avoidance of chronic causes as a part of original planning,
2. Quality Control - the elimination of sporadic causes of departure from historic levels of performance,
3. Quality Improvement - the elimination of chronic causes of difference between historical levels of performance and optimum levels, through quality improvement programs.

Source: J.M. Juran, *Quality Planning and Analysis* (New York 1970)

Juran (1970) expresses further the importance of differentiating chronic causes from sporadic causes.

This distinction between chronic and sporadic problems is essential because there are two different approaches for handling the problems. Chronic problems require principle of "breakthrough", while sporadic problems require principles of "control".

In 1970, Juran has even elaborated and documented the sequence of activities required for "breakthrough" and "control" in his book, *"Quality Planning and Analysis"*.

The breakthrough activities are:

1. Breakthrough in attitudes convincing those responsible that a change in quality level is desirable and feasible.
2. Discovery of the vital few projects - determining which quality problem areas are important.
3. Organizing for breakthrough in knowledge - defining the organizational mechanism for obtaining the knowledge for achieving a breakthrough.
4. Creation of a steering arm - defining and staffing a mechanism for directing the investigation for quality improvement.
5. Creation of a diagnostic arm - defining and staffing a mechanism for executing the technical investigation.
6. Diagnosis - collecting and analyzing the facts required and recommending the action needed.
7. Breakthrough in cultural pattern - determining the effect of a proposed change on the people involved and finding ways to overcome resistance to change.
8. Breakthrough in performance - obtaining agreement to take action.
9. Transition to the new level - implement the change.

Source: J.M. Juran, Quality Planning and Analysis (New York 1970)

The Control activities are:

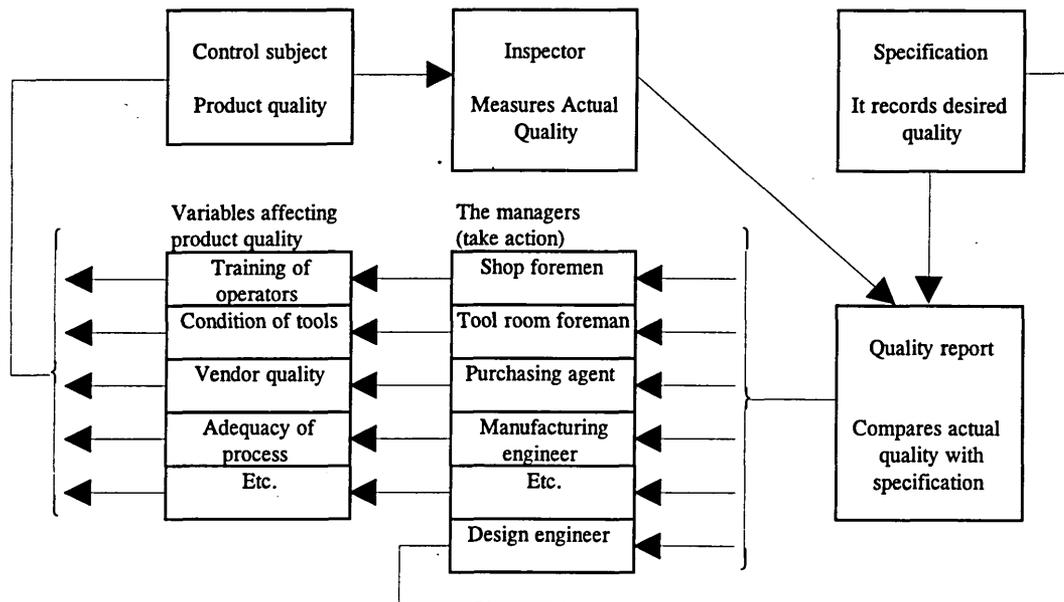
1. Choosing the control object
2. Choosing the unit of measure
3. Choosing a standard
4. Designing a sensor
5. Interpreting results
6. Decision making
7. Action

Source: J.M. Juran, Quality Planning and Analysis (New York 1970)

Further, Juran (1970) had discussed the relationships between the product quality attributes and the variables that affect product quality with a "Servomechanism Diagram of Quality Control". (Figure 3) It can be seen from the diagram that the control of product quality attributes is related to variables like quality report, specification and the personnel's action etc.

FIGURE 3

SERVOMECHANISM DIAGRAM OF QUALITY CONTROL



Source: J.M. Juran, Leadership for Quality: An Executive Handbook (N.Y. 1989)

Summing up, his biggest contribution was to take quality beyond the technical aspects of quality control which were well developed in the 1940s to the management arena.

Basically, the approach Juran advocates is process oriented. He believes that there are universal sequences of steps to achieve those "breakthrough" and "control" without the consideration of the type of organizational context.

Although he has proposed the "breakthrough activities" and "control" activities, he does not offer an insight into how can one integrates these "breakthrough" and "control" to achieve quality results.

Furthermore, there are several limitations on Juran's quality control model. First of all, Juran's model is incomplete as he has neglected the behavioral aspect of the personnel such as worker attitudes and participation which might greatly influence their quality control actions. Secondly, he has not incorporated the "quality of design" variable in his quality control model which is of primary importance to the achievement of quality breakthrough.

Crosby's Conceptualization of TQM

Description of Crosby's Idea

Philip B. Crosby (1979) believes the problem of quality belongs to management. He became famous in government circles because of his success with zero defects. He was successful in reducing the manufacturing defects in the production of missile by embarking on a "zero-defect" program which later became a government policy.

Crosby's approach to quality is built around four fundamental beliefs, which he calls the "four absolutes" (Crosby 1979). The four absolutes are summarized as follows:

1. Crosby's definition of quality is "conformance to requirements". He discusses conformance and non-conformance rather than low and high quality.
2. Quality is achieved by prevention not appraisal. The quality system for suppliers attempting to meet customers' requirements is to do it right the first time - prevention, not inspection.
3. The quality performance standard is zero defects. Crosby has advocated the notion that zero errors can and should be a target. He advocates that there is no acceptable quality levels, and often cite the fact that a surgeon should strive for zero fatalities where no tolerance for failure to be acceptable.
4. The measurement of quality is the cost of quality. That is to say, quality is measured by the price of non-conformance, not by indexes. Costs of imperfection, if corrected, have an immediate beneficial effect on bottom-line performance as well as on customer relation.

Source: P.B. Crosby, *Quality is Free: the Art of Making Quality Certain* (N.Y. : New American Library, Mentor 1979).

Unlike Dr. Deming and Dr. Juran, Crosby differentiates himself from them by emphasizing the people aspects of improvement rather than focusing on statistics and engineering methods.

He has developed fourteen steps to a quality improvement programme (Table 3.3) and identifies a number of important behavioral and technical ingredients in a successful quality system, such as quality awareness, supervisor training, management attitudes and understanding, the quality information system etc.

TABLE 3.3
CROSBY'S FOURTEEN STEP QUALITY IMPROVEMENT
PROGRAM

Step	Step Description	Purpose
1	Management Commitment	To make clear where management stands on quality
2	Quality Improvement Team	To set up a high-level, cross-functional team to run the quality improvement program
3	Quality Measurement	To provide a display/report of current and potential non-conformance problems in an objective manner
4	The Cost of Quality	To define the ingredients of cost of quality and explain its use as a management tool
5	Quality Awareness	To provide a method of raising the personal concern for quality felt by all employees
6	Corrective Action	To provide a systematic method of resolving problems identified
7	Zero Defects (ZD) Planning	Preparatory activities for ZD program launching
8	Supervisor Training	Define the type and extent of supervisor training
9	ZD Day	Popularize ZD philosophy and raise quality consciousness
10	Goal Setting	Goals and commitments are set by employees for themselves and their groups

- | | | |
|----|---------------------|---|
| 11 | Error-Cause Removal | Develop a method for employees to communicate with the management regarding error-cause removal |
| 12 | Recognition | To appreciate employees with superior performance |
| 13 | Quality Councils | Brings together the professional quality staff for a planned communication on a regular basis |
| 14 | Do it over again | Emphasize that quality improvement never ends and is a constant effort |

Source: P.B. Crosby, Quality is Free, The Art of Making Quality Certain (N.Y.: New American Library, Mentor 1979).

Feigenbaum

Description of Feigenbaum's Idea

Feigenbaum argues for a systematic and total approach to quality, requiring the involvement of all functions in the quality process, not just manufacturing. His idea is to build in quality at an early stage, rather than inspecting and controlling quality after the fact.

Feigenbaum(1951) strove to move away from the primary concern with technical methods of quality control, to quality control as a business method. He emphasizes the administrative viewpoint and considers human relations as a basic issue in quality control activities. Individual methods, such as statistics or preventative maintenance are seen as only segments of a comprehensive "Quality Control" programme.

In 1983, Feigenbaum is credited with coining the term "total quality control". He emphasizes the importance of customers perceptions of variation in quality between firms and also the variation in effectiveness between the quality programmes of firms. He defined total quality control as "an effective system for integrating the quality development, quality maintenance, and quality improvement efforts of the various groups in an organization so as to enable marketing, engineering, production, and service at the most economical levels which allow for full customer satisfaction." (Feigenbaum, 1983). He described in the third edition of his book "*Total Quality Control*" that total quality

management as an approach to organizational functioning which employs total quality control principles and regards quality of products and services as a primary business strategy and a fundamental determinant for business health and growth. Quality is seen as having become the single most important force leading to organizational success and company growth in national and international markets.

Taguchi Conceptualization of TQM

Description of Taguchi's Idea

The realities of deadlines and production limitations during postwar Japan, helped to shape Dr. Taguchi's approach to applying experimentation techniques to actual design and production situations. Subsequently, he focuses on two engineering strategies for improving reproducibility and overall quality. One is to use a new set of technical considerations to determine what should be accepted as valid data. The other crucial strategy is to take noise factors into account to ensure robustness at downstream conditions. His overall quality philosophy is called "quality engineering" (Taguchi 1989).

Taguchi Methods have been particularly marketed in North America and Western Europe (Snee 1986). These methods concern minimum systematic prototyping for product design and process calibration. However, American companies did not truly become quality conscious until the 1980s when it became apparent that good quality sells, reduce costs, and increases profits. Taguchi methods has not yet become recognized as powerful tools for quality improvement until the quality revolution began to gain its momentum in the

late nineties. The first successful Taguchi experiment in the United States was run at AT&T Bell Laboratories in 1980 and applications in Europe commenced about 1985 (Stebbing 1986).

Dr. Taguchi has been particularly recognized for three major contributions to the field of quality: the loss function, orthogonal arrays and linear graphs, and robustness (Snee 1986).

Taguchi, in his book *"Introduction to Quality Engineering"*, states, "Quality is the loss a product causes after being shipped, other than any losses caused by its intrinsic functions. "(Taguchi, 1989). In other words, he believes that any failure to satisfy the customer is a loss. Loss is determined by variation of performance from optimum target values. Loss, therefore, in the form of variability from best target values, is the enemy of quality.

In the past, "firefighting" has been a common practice for tackling critical problems. Quite often the solution has only a "Band-Aid" effect with the problem recurring or the situation becoming worse. Dr. Taguchi (1989), however, stresses the role of robust design, parameter design and its relationship to on-line quality control and other design stages in improving quality.

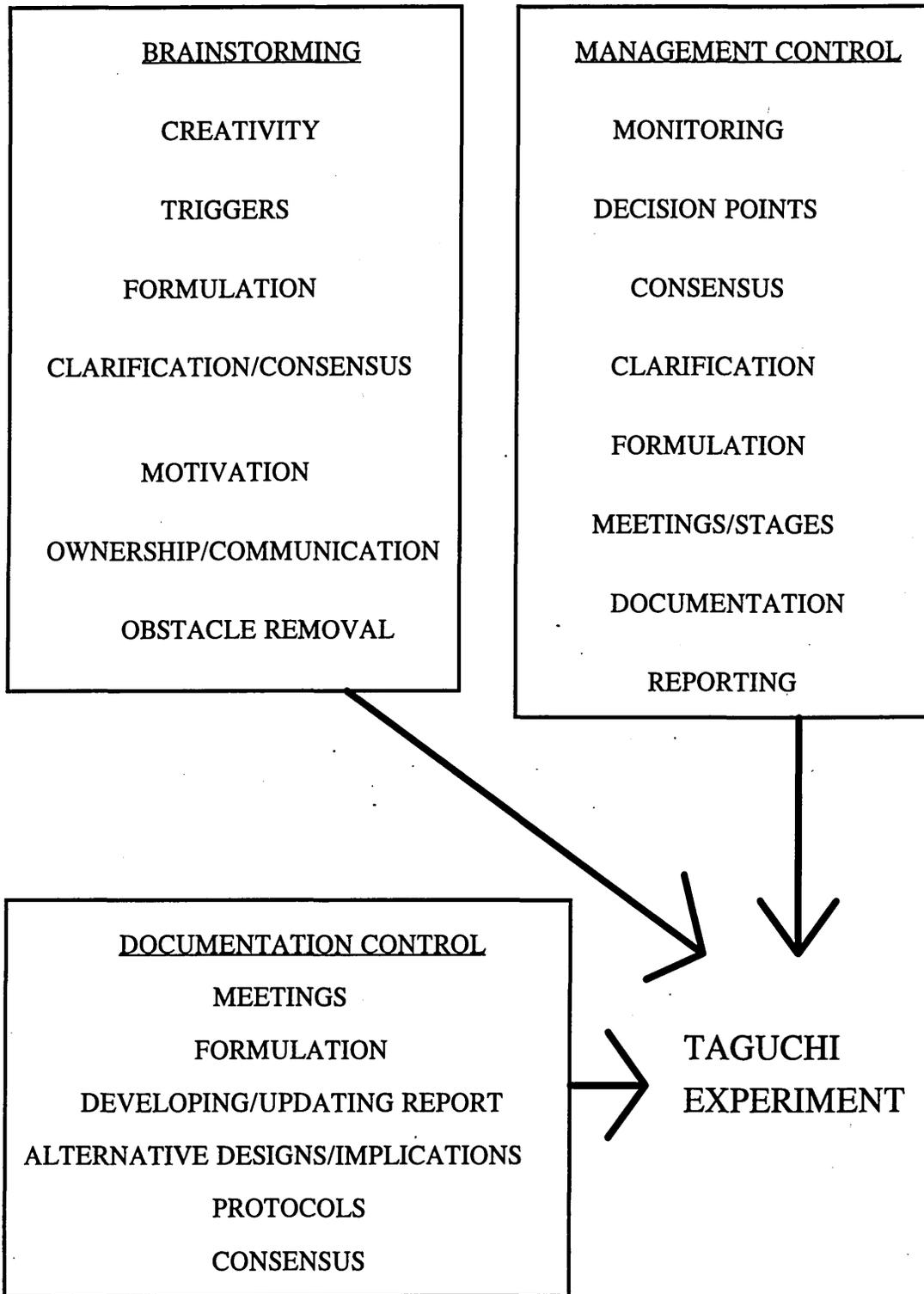
Unlike those traditional statistical techniques advocates, Dr. Taguchi does not faithfully follow all applicable statistical rules. He uses statistics as a foundation but emphasizes engineering judgment. His major focuses are on:

- . design of experiments
- . making statistical methods more palatable or accessible
- . minimum systematic prototyping for design and production, or calibration

Source: G.Taguchi, Introduction to Quality Engineering, Version 2.1.(MI:
American Supplier Institute 1989)

Besides, Taguchi (1989) also introduces the three basic team functions in the process of developing and implementing the Taguchi experiment: brainstorming, management control and documentation control which has become known as the "Brainstorming, Documentation and Control Trilogy".
(see Figure 4)

FIGURE 4
THE TAGUCHI TRILOGY



Source: G.Taguchi, Introduction to Quality Engineering, Version 2.1.(MI: American Supplier Institute 1989)

The essence of Taguchi Methodology can be summarized into seven basics as follow (Taguchi 1989):

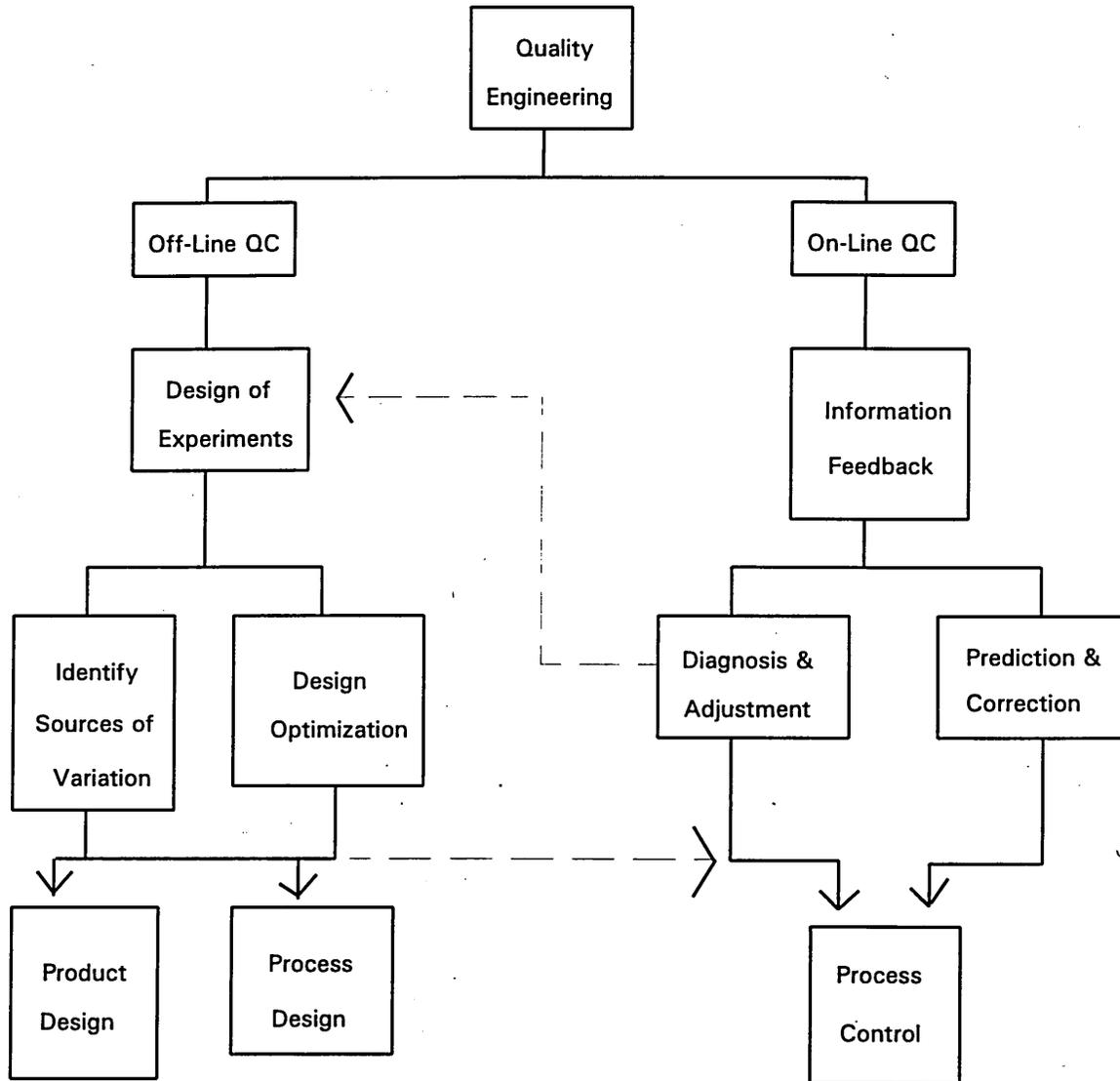
- . Push quality back to the design stage
- . Initial emphasis in on design not inspection(off- line quality control)
- . Routine optimization of product and process design prior to production
- . Robust product or intrinsic quality and reliability
- . Quality loss: loss to society may far exceed cost of product
- . Statistics is not the main point

All of these show that Taguchi's emphasis is on pinpointing the significant variables, finding out what matters, finding out what should be controlled, and formulating the quality optimization settings.

Many academics have indeed mistaken Taguchi's idea that Taguchi methods deal solely with experimentation. In fact, Taguchi's ideology deals with a much broader spectrum of quality concerns and associated quality techniques and tools. His overall quality philosophy is " quality engineering". The framework of quality engineering (Taguchi 1989) is presented in Figure 5 which interrelates with the role of both design engineering and manufacturing. It contains the quality control activities that constitute each phase of product research and development, process design, production and customer satisfaction. The role of each of these activities is to support overall goals of continuous quality improvement.

FIGURE 5

TAGUCHI'S QUALITY ENGINEERING FRAMEWORK



Source: G.Taguchi, Introduction to Quality Engineering, Version 2.1.(MI: American Supplier Institute 1989)

By focusing on robust design, Taguchi intends to make the product, process or part insensitive to those normally uncontrollable "noise" factors that contribute to poor product performance and business failures. As such, the Taguchi approach is not just another form of design of experiments, rather, it is a part of the successful total quality management philosophy.

To sum up, one should bear in mind that not every problem is a Taguchi problem, Taguchi methods and approach is only a part of the total quality management (TQM) practices.

Kanji & Asher's Conceptualization of TQM

Kanji along with his co-author defines quality as a continuous process that can be broken anywhere in the system of supply and customer service. They believe that the organization can motivate their employees and suppliers to provide quality consistently by letting every person know how their activities help fulfill customer's requirement. They have incorporated all the essential quality management ingredients and develop a total quality management model called "Pyramid principles of TQM" (Kanji & Asher 1993)

In Kanji & Asher's pyramid model (1993) of total quality management, they state a framework which encompass a set of four general governing principles and eight core concepts for others to follow.

The four governing principles are:

1. delight the customer
2. management by fact
3. people-based management
4. continuous improvement

He explains that each of the principle can be used to drive the improvement process. To achieve this, each principle is translated into practice by using two

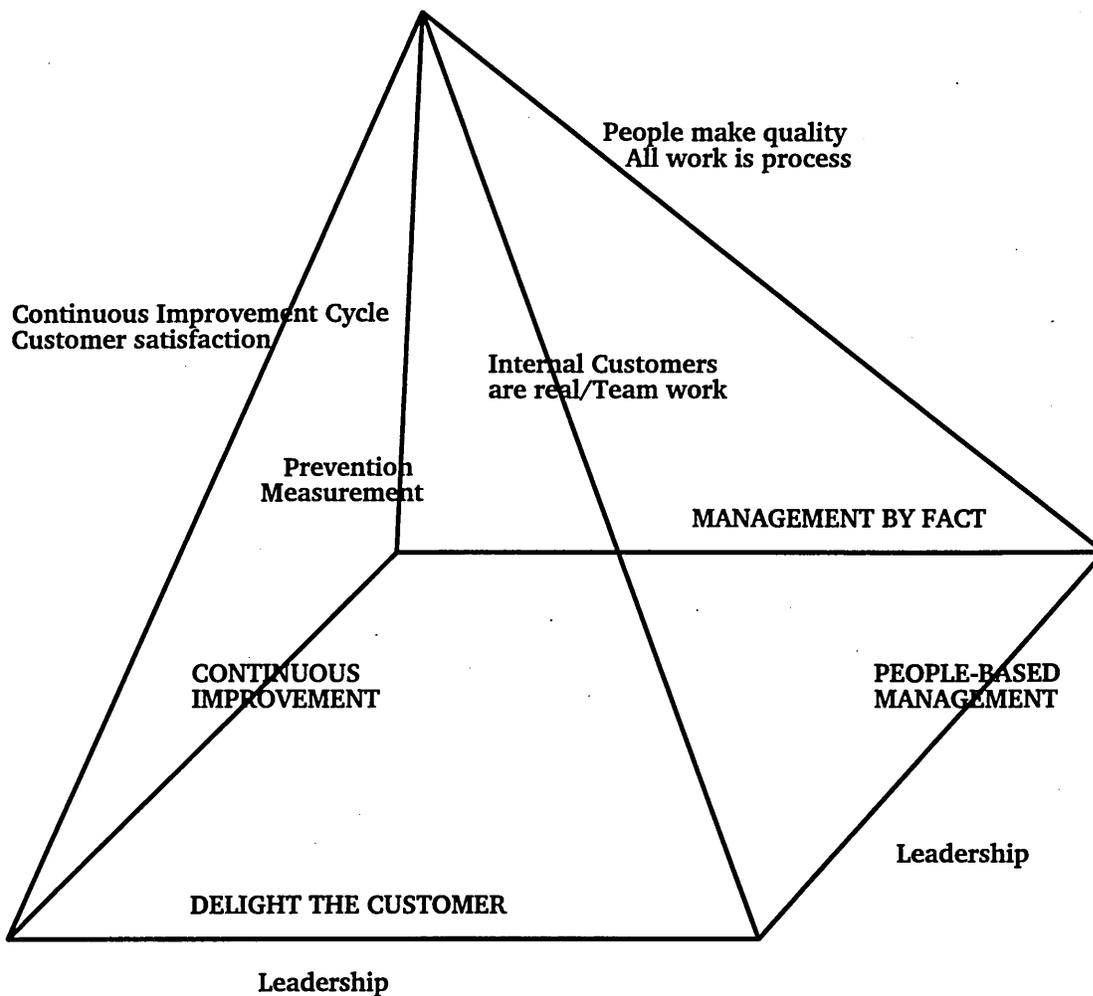
concepts. These concepts show how to make the principle happen. Kanji & Asher's eight core concepts are:

- . customer satisfaction
- . internal customers are real
- . all work is a process
- . measurement
- . team work
- . people make quality
- . continuous improvement cycle
- . prevention

All these principles and core concepts are incorporated and represented in his four-sided pyramid principles of TQM with the core concepts. (Figure 6)

FIGURE 6

KANJI & ASHER'S PYRAMID PRINCIPLE OF TQM



Source: Kanji G.K. & Asher M., Total Quality Management Process: A Systematic Approach (Oxford, Carfax Publishing Company 1993)

Total Quality Management focuses on the continuous improvement of all systems and processes in an organization. In fact, TQM is a process itself, a process within the overall system of the organization. The entire organization is a system made up of many processes to accomplish the functions of the organization - one of which is TQM. Kanji (1990) points out that the TQM process transforms customer's wants, desires, needs, expectations and requirements, and all other inputs in the organization into a product and or service that satisfies the customer. That is to say, the output of the total quality management process is customer satisfaction. This is the first principle which Kanji advises companies to adhere (Kanji 1990).

Kanji and Asher (1993) emphasize that customer is king. Only customers can determine total customer satisfaction. Customers are the focus of all total quality management efforts. Without customers, the organization ceases to exist. As a result, every organization and everyone in the organization must constantly strive to satisfy the current customers and in the future. Delight means being best at what matters most to customers and this changes over time. In order to know, to understand customer needs and to find out whether the customer is satisfied, intense observation is essential (Kanji 1990). Through observation, communication - especially in terms of listening - and measurement the organization can determine total customer satisfaction. The second concept relates to delighting the customer is internal customers are real. For this concept, Kanji means that customers are all those touched by the product and or service, whether internal or external to the organization, as each process in the organization is the customer of the preceding process. These are the internal customers. If each internal customer satisfies the next internal customer while focusing on external customer satisfaction, then the ultimate

customer (external customer) will be satisfied (Figure 6) (Kanji & Asher 1993). By the same token, all customers must be identified and all customer needs and expectations must be satisfied in order to continue to satisfy the customer. Beside, customer expectations are wide & varies and they change continuously. TQM requires and focuses on satisfying of both internal and external customers. To achieve that, it requires a continuous review of both internal and external customer needs, expectations, and the development of customers' relationships to ensure customer total satisfaction and delighting the customer.

For the second principle of "Management by Fact", Kanji & Asher (1993) address the importance of understanding the process, and knowing the current performance levels of products and or services in customers' hands and of all employees.

Kanji and Asher (1993) point out that the first step in any improvement effort is understanding the process and all work is a process. A process is series of activities that takes an input, modifies the input, and produces an output. Thus, a process is the job itself. A process has many levels. Due to the various levels of processes, one must determine boundaries of a specific part or parts of a process. This means one must define the start and the finish. A thorough understanding of the process not only has a great impact on the effectiveness of the rest of the improvement process but also is necessary before continuing to any other step in the improvement methodology. We can measure our improvement only if we know where we are starting from. Every process has variations and it is always a part of the process. The aim is to eliminate or reduce variation. The causes of variation are both common and special. All

variation is an opportunity for improvement. Therefore, all work is an opportunity for improvement. Having the facts necessary to improve the process and in turn manage the business at all levels is crucial to total quality management. All these process variations and process performances must be measured to provide information to people in making their decision. Decisions are made based on "fact" rather than "gut feeling" is essential for continuous improvement.

Kanji and Asher (1993), in his third principle "People-based Management", states the vital role of people in the continuous quality improvement process. In a TQM environment, people are the most important resource. He recognizes that systems, standards and technology themselves will not mean or achieve quality. People are the key to victory in the Total Quality Management Journey. People make quality but not machinery, standards or technology. The rationale is clear as organization is made up of people, therefore they can have a positive or a negative effect on the performance of the organization. Traditionally, organizations have focused on minimizing the negative effect of people, however, they have neglected the positive effect of people in an organization's performance. Total Quality Management (TQM) has a different approach, it tries to maximize the positive benefits from people rather than minimizing the harm from people.

TQM requires the total involvement of the entire organization, including management, all the people in the organization, the suppliers and the customers, dedicated to the ultimate goal of customer satisfaction. Everyone must be involved. TQM is accomplished by fostering both individual and team contribution in the organization. Individuals work to continually perform their

duties and improve the processes in the organization, with the focus on total customer satisfaction.

Therefore people, must be encouraged to be creative and innovative within all areas of their work. They must be allowed to make whatever changes are necessary within the regulatory guidelines to perform the work and improve the system. Knowing what to do, how to do and getting feedback on performance are all part of encouraging people to take responsibility for the quality of their own work. Involvement and commitment to customer satisfaction are ways of generating this. Successful involvement requires empowering people, enabling people and entrusting people. Empowerment means people have the authority to do whatever is necessary to perform and improve their work. Enabling people achieve continuous improvement requires the creation of culture that trains people in appropriate skills, encouraging people to participate and recognizing people for their participation and contributions. Trust is the prerequisite for involvement and empowerment, therefore entrusting people is crucial to continuous improvement. Trust is based on communication, listening and understanding. Employees must trust their managers, their managers trust them and each of the employees must trust each other. This is the requirement for building partnership relationships between all people involved in the quality improvement process.

Kanji (1990) further elaborates that the involvement of teams is critical to success in total quality management. The formation of self-directed team and the development of teamwork among employees, suppliers and customers is an useful technique to achieve total quality management. Teams therefore are essential structural ingredient of Total Quality Management and "teamwork"

makes it easier for team members work together to achieve continuous quality improvement.

The last principle of TQM concerns us within the concept of continuous improvement cycle. Unlike other management methods, total quality cannot be a quick fix on a short-term goal that will finish when a target has been met. It is neither a Programme nor a project that brings along major breakthroughs. On the contrary, total quality management philosophy provides the overall concepts that foster continuous improvement that is incremental change in the organization. Kanji (1990) stresses that TQM is a systematic, integrated, consistent and company-wide perspective involving everyone. TQM focuses on total satisfaction of both internal and external customers that seek continuous improvement of all processes.

Kanji and Asher (1993) emphasize the use of all people in the form of teams to bring about continuous improvement. He recognizes optimal life cycle cost and uses measurement within a disciplined methodology to target improvements. He puts emphasis on the "prevention" rather than the "correction" of defects, and emphasis on building quality in design. He advocates the elimination of losses and reduction of variability as important aims for organizations to pursue.

To conclude, Kanji endorses a view that continuous improvement system is a methodology for improving all material services supplies to an organization, all the processes within the organization and the degree to which the needs of the customers are met, now and in the future. Therefore, continuous improvement

gears the organization toward attainment of the vision of achieving victory in today's competitive battle field.

3.3 COMPARISONS

Despite having been around for decades, the management of quality has undergone so many changes in content and scope. The search for quality has leapt from focusing exclusively on the production function to now embrace all activities of the organization and from being mainly concerned with operative decisions to one constitutes part of the total business strategy, involving all people and all levels of management. This section provides some comparisons on

- . quality philosophies of various quality gurus
- . traditional quality management and total quality management

The comparison of quality gurus ideas (Wong 1993) is presented in the Table 3.4

Most Quality Gurus claim their differing approach as Total Quality Management, whilst at the same time arguing for the uniquely successful nature of their approach. In fact, there is no single Guru who is completely responsible for the philosophy and the concepts, all have contributed to Total quality management practices. Total Quality Management has evolved through the gurus teachings and company best practices.

TABLE 3.4
A COMPARISON OF QUALITY GURUS IDEA

	Deming	Juran	Crosby	Kanji/Asher	Feigenbaum	Taguchi
Basic orientation toward quality	Technical.	Process.	Motivational.	Total process, strategic.	Total, systematic.	Technical, proactive.
What is quality?	Nonfaulty systems.	Fitness for use; freedom from trouble.	Conformance to Requirement.	Competitive, opportunity.	What customer says it is.	Customer's performance requirements.
Who is responsible for quality?	Management	Management.	Management.	Everyone.	Everyone.	Engineers.
Importance of customer requirements as standard.	very important.	Very important; customers at each step of product life cycle.	Very important.	Very important	Very important.	Very important.
Goal of quality.	Meet/exceed customer needs; continuous improvement.	Please customer, continuous improvement.	Continuous improvement; zero defects.	Delight the customer.	Meet customer needs; continuous improvement.	Meet customer requirements; continuous improvement.
Methods for achieving quality	Statistical.	Planning, control, improvement.	14-point framework.	TQM framework	Total quality control (TQC).	Robust design and processes.
Chief elements of implementation.	14-point program.	Breakthrough projects; quality council; quality teams.	14-point program; cost of quality, quality management	4 principles and 8 core concepts	Statistical and engineering methods across the company.	Statistical design of experiments; quality teams.
Role of training.	Very important for managers and workers.	Very important for managers and employees.	Very important for managers and employees.	Very important for all people	Very important for managers and supervisors.	Important but not defined.

Source: WONG, Y.L. (1993), Quality Strategy of Small Business, Proceedings of the 2nd Asian Congress on Quality & Reliability.

Global competition is quickly making the traditional quality management approach to quality obsolete. The focus of the new Total Quality Management approach to quality is not on how much we are making but on how well we are meeting our customers requirements. Many companies now start to realize that customer satisfaction determines financial success. Table 3.5 (Ishikawa 1990) provides a comparison between total quality management approach and the traditional management approach to quality which gives a clearer understanding of Total Quality Management philosophy.

As indicated in table 3.5, the new Total Quality Management approach to quality demands a dramatic shift in thinking, emphasis and strategy in the implementation of TQM.

TABLE 3.5

A COMPARISON OF TRADITIONAL QUALITY MANAGEMENT
AND TOTAL QUALITY MANAGEMENT

Traditional Quality Management	Total Quality Management
Profit through internal production costs reduction (focus on profits)	Profit through continuous customer satisfaction (focus on customers)
Technical and operative perspective of quality	Strategic perspective of quality
Reactive, fire-fighting approach	Proactive, systematic, integrated, consistent and company-wide approach
Stresses on short-term	Stresses on long-term and continuous improvement
Advocates major breakthroughs	Advocates small innovations and improvements
Randomly adopts improvement efforts, having autocratic leadership style	Start at the top and "sets the example" through cooperative leadership style
Relies on programs	Is a new way of life
using "gut feeling" and opinions	Using "facts" (information)
Inspects for errors	Prevents errors and emphasizes quality by design

Source: K. Ishikawa, Introduction to Quality Control (Tokyo, 3A Corporation 1990)

CHAPTER FOUR QUALITY STRATEGIES

Quality strategy can be broadly interpreted as a strategy to secure "quality" as a means for achieving a competitive edge. Depending on the definition of "quality", a quality strategy can be defensive, assurable or offensive in nature.

4.1 DEFENSIVE QUALITY STRATEGY

In defensive strategy, management perceives quality as a problem in the organization that needed to be tackled (Teboul 1991). As it is believed that there is always a trade-off between different costs, therefore priority is given to productivity and cost control in solving quality problems and quality remains a defensive weapon.

Since the prime objective of this increased volume and cost reduction approach is the optimum use of people, machines and to work at full capacity, the results are that workers were seen as a cost to be controlled rather than an asset to be developed and a source of improvement & initiative. Management takes on a passive approach towards delays, reworks and scraps, all these are accepted in all "good conscience" as long as the deadlines are met (Dale 1990).

Adopting this trade-off approach also means management abandoning all hope of reaching zero defect, as the responsibility for quality is considered to be the quality control department's job (Casco 1992). At each work station the operator is simply asked to follow standards and procedures and has no direct responsibility for the quality of his own work. The quality control department plays an important role here, because it has to act more or less like a selective filter to improve final quality of the

product by tedious inspections. As a result, quality as a problem is delegated to a specialized department (the quality control department), but in fact before quality become a problem, the defect was a design, engineering, production or marketing problem.

Under this strategy, all jobs and functions are specialized and that products are standardized, centralized and stratified to an extent that departmental and functional territories are fixed which reduces cross-departmental interactions and communications, limits exchanges between various functions (Teboul 1991). Once the rules of the game is determined and established, functional staff will only concentrate on maintaining the current level of performance and stick to standards. No one is prepared to invest in process improvement, once an "acceptable" conformity level has been established by the design and engineering department. Whenever the problem exists such as performance level deviates from its habitual quality level (standards), then the "fire-fighting" teams will try to control the results and bring the situation back to the status quo (Dale & Cooper 1992).

The worse part of this strategy is that once such standards, quotas, territories and profit levels have been set, change is difficult if not impossible since management becomes insensitive to environmental changes, operators see no point in necessitates changes and are not expected to do so.

When the need for improvement is felt, ad hoc teams of engineers and quality consultants will be called upon to rescue the problems, to get rid of the final symptoms. The result is the radical reorganization and restructuring of the processes on the system. Improvement is reached by

breakthroughs without the accumulation of knowledge or systematic recording of what has been learnt, the resolution of chronic problems must wait for the next reorganization. Quality problems will continue to survive in this vicious circle. In this strategy, quality is not perceived as a strategic dimension able to provide competitive advantage but merely a problem to be dealt with by the quality control department. The aim of management is to avoid problems, it will be satisfied as long as it hears no problem and the same status quo holds good for the entire industry, even if that quality will be only just acceptable and the consumers are likely to be disappointed. Management adopts a defensive approach and does not seek for possible competitive advantage or closer links with the customer.

4.2 ASSURANCE QUALITY STRATEGY

The second type of quality strategy takes a broader role that it is considered as a solution rather than a problem. However, quality here remains externally defensive as the aim is to assure quality and to reassure the customer by meeting the specified requirements and realize the offer as promised with no more and no less (Teboul 1991).

Clearly, this aspect of quality is the quality of conformity. Quality of conformity means delivering hundred percent of the promised offer by error-free work. To achieve this, quality is built in from the start at the design stage and maintained under control during each successive process.

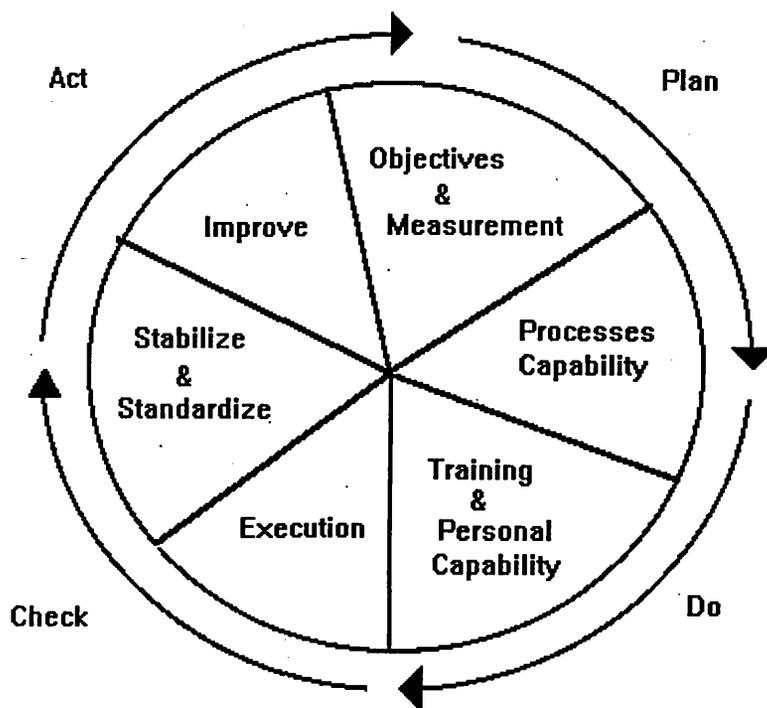
Total quality at this stage means moving from the traditional management methods to prevention and control to reduce future inspection and failure costs, then improvement until excellence is reached. Under this strategy, quality is achieved through the internal mobilization of the entire

organization. The gradual involvement of every member of the organization make quality an increasingly important part of their daily work, and the dysfunctional aspects of the old culture soon become more visible. This assurance strategy necessitates two major reforms to transform the organization (Teboul 1991). For the first reform, it demands a change in internal orientation in five major aspects. As standardization and economies-of-scale approach results in a loss of quality and flexibility, the first aspect is the need to reverse the order of priorities and to put quality before productivity. This can be done by investing in quality that is investing in knowledge of the process, in prevention and in learning. Such an investment will yield enormous savings in inspection, failure and correction costs, and the customer goodwill that follows. Understanding of the process starts from the measurement and definition of the final characteristics and inspection by trial and error. However, the basic formula is not yet optimized and most parameters are still approximately defined at this stage because the process is not well understood. Then, a more scientific approach has to be adopted to improve the formula, to identify key decisive parameters and to control the process. This includes the use of Ishikawa diagram, systematic experimentation & correlation analyses to isolate key decisive parameters, and the statistical process control(SPC) to monitor those variables within precise variation limits, so that the final result of right first time, every time is ensured (Dale 1990). The learning of the process ends with moving towards complete unsupervised customization, and to control variation, unforeseen problems through the change over from management by results and inspection to management for results . Inspection is traded for experimentation and learning.

The second aspect of the internal reorientation is to reintegrate quality responsibility into the process. This shift means that the responsibility for conformity lies mainly with the process designers and line operators to learn and improve the process, following the four steps of the Deming cycle: plan, do, check, act or improve (Figure 7)(Deming 1986).

FIGURE 7

THE DEMING CYCLE



Source: Deming, W.E. (1986) Out of the Crisis (Cambridge, MA, MIT Centre for Advanced Engineering Study).

The third aspect of the shift concerns with building quality into the process through further investment in careful planning, and empowering & entrusting line employees, organizing into quality circles or process quality improvement teams to learn & improve the process (Dale 1990). Once quality has been engineered into the process, the next aspect of shift is the control and stabilization of the process by operators to ensure that quality requirements have been achieved.

However, standard is not a once-for-all reference, therefore solely rationalize the process and accommodates new technology are necessary but not sufficient. Standard must evolve and this can be done if continuous improvement takes place so that the gains can be held. This is a long-haul operation and the basis of real cultural change (Kanji & Asher 1993).

Although a better knowledge of the process and individual participation in prevention, control and improvement can lead on to quality of conformity and productivity gains, the internal mobilization is not completed unless total quality is developed, extended across functions and throughout the organization. This is easy to understand but difficult to implement as it requires cooperation between departments and functions. This cooperative policy demands powerful and committed top management, capable of forcing departments out of their ivory towers and returning to the customer-supplier dialogue by cross- functional team work to develop new products and by partnership with outside suppliers.

The first reform turns quality from a problem to a vector of change, a management systems that can be used to turnaround the competitive situation (Teboul 1991). But total quality does not lead about cost

reductions, but solely prepares the ground and paves the way for flexibility by making both conformity to requirements and error-free work a priority, and eliminating defects in each process and in the entire organization. Therefore, the second reform of the assurance strategy is to capitalize on this internal strategy i.e. turning quality into a strategic weapon.

As this represents a radical cultural change which demands a top management's real awareness and total continuous commitment of both resources and time to move the organization in the right direction, the management of change and leadership are of paramount importance.

In this respect, leadership plays a crucial role in managing for quality in at least four major aspects (Kanji & Asher 1993). Firstly, it is only the top management awareness of the need for change and readiness to challenge old assumptions that is strong enough to unfreeze current behaviours, values and enable total quality culture to take over in the entire organization. Secondly, top management should construct a convincing cultural model through the development of responsibility and autonomy and the development of cooperation. The development of responsibility and autonomy, means managers should return to their natural role of facilitating the work of front-line operators by decentralizing information and initiative and shortening the chain of command. Decisions are taken at source and problems are settled directly between internal customers and suppliers. Implementing this, managers actually delegate and give employees the capacity to act from a sense of ownership which is a strong and true source of motivation than the carrot and stick approach (Kanji 1990). Besides, the development of cooperation means managers need to restore lateral communications and breaking down departmental barriers

by re-establishing interprocess customer-supplier relations and multiplying interdisciplinary groups to reinforces the internal solidarity and cohesion of the whole corporate system.

Making the model more convincing requires management to give a clear vision of where the organization needs to go. Of course, this can only be done by integrating "management for quality" in the corporate strategy (Kanji 1990). Challenging goals will demonstrate that top management is determined to carry out the quality revolution successfully. By launching a challenge, the management team can start to unfreeze the company, and mobilize it in a new direction. Giving clear directions does not mean managing by objectives. Too often organizations are underled, but over managed.

Lastly, the journey of quality cultural reform can be led by top management with unflagging determination and long-term visible commitment. Management can pave the way for the new practices that will create the new culture by setting themselves as role models.

By steering these changes, the internal capacities of the organization are gradually strengthened and competitive advantage is gradually established through defensive conformity.

4.3 OFFENSIVE QUALITY STRATEGY

Quality is first and foremost conformity to specifications. As we have already seen, quality assurance is a necessary condition to reduce costs and claims but not sufficient by itself to make the customer vote in company favour and win orders (Teboul 1991). Quality is satisfying

customers' needs and maximizing customers' perception of the offer but this notion of satisfaction remains passive, it does not recognize opportunities to surprise and delight the customer. Performance, usage and price are essential for customer satisfaction but they fail to create any real differentiation if they are common to all products or services offered by their counterparts.

Hence, quality should also include something which induces a customer to prefer the company's product. It is this "something" which creates a significant difference between the company and the competitors, a competitive edge. To win the battle, it is essential to focus on a strategic advantage that will position the company in front of the competitors. It is therefore vital to have a customer-driven improvement of the processes and the system throughout the company, and total quality and continuous improvements enable everyone to align his efforts to achieve the perpetual renewal of strategic differences (Kanji 1990). In this strategy quality becomes an offensive weapon.

To win the competition, it is important for firms to look for decisive marginal dimensions which are capable of changing the customer's mind rather than just keep ensuring and consolidating a stable front (Kondo 1990). Companies must continuously create new differences, and not rest on their past victories as as to cope with the ever increasing and changing customers needs, and adapt and modify the objective accordingly to the changes in the dynamics of competition and other factors in the environment.

Under this strategy, quality objectives have to be integrated into the strategic plan and swept through the organization. This involves the start of another reform.

In this second reform, the total quality process must be deployed throughout the entire organization vertically from top to bottom, and horizontally, and particularly the voice of the customer must be integrated across departments .

Instead of delighting the customer by making continuous maintenance and control in between successive innovations, improvement is now achieved by a mobilization of everybody in the organization to improve and drive the process he is working on towards customer satisfaction. That is to say, customer satisfaction is now achieved by small and gradual improvements activities in between successive innovations (Kondo 1990).

Thus, the entire organization is now more flexible and able to satisfy the customers much faster as the internal customers are much more motivated and satisfied through participation, shared responsibility and increased professionalism .

CHAPTER FIVE DESCRIPTIVE ANALYSIS

5.1 INTRODUCTION

To meet the research objective, it is necessary to perform detail analysis of the data to understand the goals and the roles of quality strategy among Hong Kong small businesses. In this chapter, the objectives are (1) to describe respondent characteristics and attributes, (2) to understand the perception of owner-managers on quality strategy within the Hong Kong small business context, (3) to understand the specific key quality practice in these businesses, (4) to understand the practical implications of the varying perceptions of the level of strategic quality implementation within the framework of Total Quality Management.

5.2 CHARACTERISTICS OF THE RESPONDENTS

The sample attributes are shown in Table 5.1

Although the sample size is small, it does include the respondents from various background when comparing to their share of the Hong Kong industries, implying the balanced representative from the small manufacturing business sector of Hong Kong (Figure 8). The results of this survey do indicate the high level of interest in TQM exhibited by these small businesses.

Table 5.1 presents the summary of some factual information including size, industry and history, as well as some perceptual information on company's technology and company structure being used during the interview discussion. Since every effort had been made in reaching small

TABLE 5.1

CHARACTERISTICS OF THE RESPONDENTS

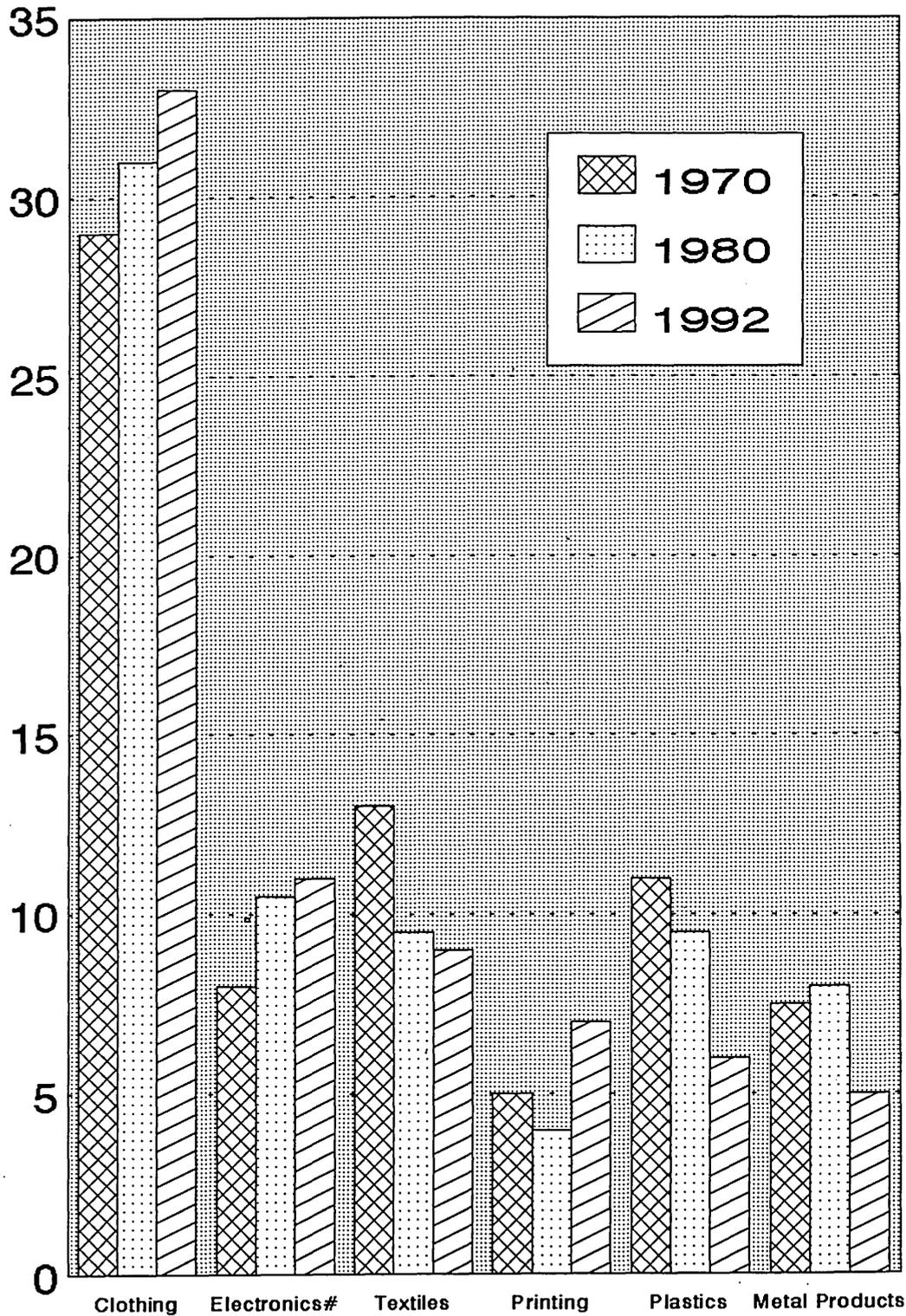
Organization Variable	Category	No. of Firms
Industry	Garment/clothing	14
	Electronic	2
	Chemical	4
	Metal	7
	Moulding	9
	Printing	8
Size	Less than 10	18
	Less than 20	16
	Less than 50	8
	Less than 100	2
Structure	Simple	26
	Medium	16
	More complexes	2
Technology	Low level	4
	Medium Level	40
	High Level	0
History	Less than 1	4
	Less than 3	12
	Less than 6	26

business owner/managers, it is obvious from the statistics that a good mixture of company background had been achieved although there is a higher proportion of sample respondents from the garment/clothing industry.

Figure 8

Relative Employment Share of Major Manufacturing Industries, 1970, 1980 and 1992

Percent



- (1) Percentages for 1970 from Employment Statistics, Labour Department
- (2) Percentages for 1980 and 1992 from Reports of Employment, Vacancies and Payroll statistics, Census & Statistics Department

5.3 DESCRIPTION OF THE QUALITY CONTEXT

In this section, the quality enforcement and implementation situations within these firms will be analyzed in detail and discussed with respect to Kanji's & Asher's (1993) four governing principles and eight core concepts.

Delighting the Customer

(1) Importance of quality as a competitive parameter

TABLE 5.2
EVALUATION OF COMPETITIVE PARAMETERS FOR THE COMPANY

Parameter	Irrelevant	Unimportant	Modestly Important	Rather Important	Very Important
Market Price			19%	66.6%	14.3%
Product Quality				23.8%	76.2%
Delivery		7.2%	60.8%	32.0%	
Advertising	2.4%	31%	62%	4.7%	
Service before Sale		4.7%	69%	26.2%	
Service after Sale			11.9%	9.5%	78.5%
Assortment		7%		14.3%	78.5%
Warranty			42.8%	36.7%	21.4%
Handling of Complaints				28.6%	71.4%

Table 5.2 shows the degree of importance of various competitive parameters as perceived by the respective small businesses in Hong Kong. It indicates that these small enterprises perceive assortment and service after sale as the most important competitive parameters. While product quality and handling of complaints are also being considered as important competitive factors. The result reflects that most of these small businesses surveyed realize the importance of quality and customer satisfaction as they tend to rate assortment, product quality as important competitive factors. However, it seems that they have some misconceptions about total quality management as they also rank after-sale service and complaints handling as important competitive factors.

(2) *Customer involvement in defining company's quality goal*

The first principle of total quality management focuses on the importance of understanding customers needs and agreeing and meeting them. This implies companies need to find out what would delight the customers, what matters most to customers before committing resources into production. Therefore, it is critical to incorporate both internal and external customer's perspective in defining the firm's quality goals. It is because only customer can determine customer satisfaction. Otherwise, it would be wasteful to produce the unwanted quality that does not yield any customer satisfaction. Beside, the people (employees) who implement the quality objectives should be communicated and satisfied also as every activity and everyone will affect product quality. Table 5.3 shows that only 18% of the 44 small businesses have incorporated their customers view in defining company's quality goals.

TABLE 5.3

CUSTOMERS INVOLVEMENT IN DEFINING COMPANY'S
QUALITY GOALS

	Number of firms	% of total samples
Owner Manager	38	86
Employees	3	7
Main Customers	8	18

This reflects that they haven't incorporated customer views to determine their customer's expectations of the company, and their future needs. These small businesses are still employing the traditional management wisdom in defining their companies' quality goals. This, in fact would be a wasteful of resources and a counter force to the successful enforcement of total quality management. Since they have not finding out what the customers really want, so the result may be having the wrong focus.

TABLE 5.4

CRITERIA USED TO CHECK ON CUSTOMER SATISFACTION

	No. of firms	% of total samples
Customer Satisfaction with Product	23	52
Delivery to Right Customer	36	82
Quality of Sales People	5	11
Performance of Sales People	3	7
On Time Delivery	3	7

One of the related concept in this principle deals with the identification of all customers (both internal and external) and customers needs continuously. No doubt, this requires a continuous review of customers needs, expectation, satisfaction level and the development of customers relationship so as to ensure continuous customer satisfaction.

As Juran (Juran, 1988) asserts in the "quality planning" element of his trilogy that we need to

- . identify internal and external customers
 - . determine customer needs
 - . develop a product or service that respond to those needs
 - . establish goals that meet the needs of customers and suppliers .
- prove that the process is capable of meeting quality goals
under operating conditions.

However, it is evident from Table 5.4 that these small businesses have not collected sufficient information on the level of satisfaction of their customers. In over half of them major concern is exclusively upon external customer satisfaction.

TABLE 5.5

METHODS OF RECOGNIZING CHANGES IN CUSTOMER NEEDS

	No. of firms	% of total samples (44)
Systematic Market Panels or Surveys	2	4.5%
Information from Sales Force	36	81.8%
Surveys	6	13.6%
Building Customer Relations	2	4.5%

It appears from Table 5.5 that only 2 companies (4.5%) conduct customer or market surveys to determine their customer's expectations of the company and their future needs. These small enterprises mainly rely on receiving both positive and negative feedback, through customer complaints or compliments through the sales team. The sales team serve the dual function of being the "customer contact department".

This means they have not developed much system to detect the present and changes in their customer needs. This is again not a right approach to total quality management as TQM effort is an ongoing effort, in part striving for the total elimination of error and in part recognizing the changing nature of customer needs and expectations. In achieving these, a proper information system is needed to ascertain current and future customer requirements and expectation.

Leadership

Top management commitment to quality is essential for a firm to implement total quality management successfully as resources and management leadership are required. In particular, top management leadership is crucial as they are the one that possess the authority and resources required in initiating and leading the quality process. With their leadership, a sound quality policy can be established. They need to state, in their quality policies, their missions and visions on the quality of their companies' products, and on their commitment to their customers, together with arrangements for implementation. They play a major role in publicizing the contents of the quality policy to all employees, motivating the employees, and made it understood at all levels of the organization.

The survey results (Table 5.3) show that 90 per cent of the small businesses' owner-manager are involved in defining their company's quality goal. This reflects that top management leadership exists in these small enterprises and their commitment is high. This result is pretty confirming as Chinese managers emphasize leadership and most of the small businesses' owner-managers are usually directly involved in the day-to-day operations of the company. Unfortunately, most of these Chinese owner-managers are employing autocratic leadership style which means employees involvement in defining company's quality goal is rare.

TABLE 5.3

CUSTOMERS INVOLVEMENT IN DEFINING COMPANY'S
QUALITY GOALS

	Number of firms	% of total samples
Owner Manager	38	86
Employees	3	7
Main Customers	8	18

Management by Fact

Understanding the process and recognizing the current levels of performance of the products in customers' hands and of all employees are the points to be noted in this principle. This is the first stage of being able to improve the process and all work is a process. Then the facts (information) must be collected, methods must be developed to collect these information and measurements must be determined for improvement.

Role of T.Q.M. methods for the development of total quality management

One element of total quality management is to base decisions on data, not opinions. To support and develop a process of continuous quality improvement, it is necessary for an organization to use a selection of quality management tools and techniques. Some of these tools are simple whilst others are more complex.

TABLE 5.6

THE USE OF T.Q.M. METHODS IN THE PRODUCTION PROCESS

Statistical Methods	Number of firms	% of total samples (44)
Cause and Effect	10	22%
Group Discussion	24	54.5%
Controlled Experiments	3	6.8%
Process Control Charts	5	11.3%
Process Capability Studies	8	18%
Quality Control Circles	10	22%

It can be seen from table 5.6 that these small enterprises are not keen on using those modern quality management tools in the improvement of their production process. Only 10 companies (22%) used cause & effect analysis and 8 (18%) companies used process capability studies to determine the underlying causes of problem and identify the vital few of their production process. The majority of the owner/managers expressed that they have little knowledge and experience in the mentioned total quality management tools and techniques. These small companies tend to rely on small group discussion (54..5%) to solve most of their production problems. Actually, it is not hard to understand this result as small businesses usually have limited management capabilities and resources to employ these quality management tools.

TABLE 5.7

THE USE OF MODERN Q.C. SYSTEMS IN PRODUCTION
PROCESS

	Number of firms	% of total samples (44)
JUST-IN-TIME (JIT)	14	32%
Statistical Control Methods	10	22%
AOQ & LTPD	5	11.3%

With the above answers, it is a bit astonished to find that 14 companies (32%) have employed one of the innovative inventory management system (Just-in-time to improve the quality of their production process. On the other hand, most of these companies neither possess the knowledge nor have the capabilities in using other modern quality control systems such as AOQ & LTPD etc.

TABLE 5.8

THE USE OF PROCESS CAPABILITY STUDIES RESULTS

Major Quality Decisions	No. of firms	% of total samples (44)
Choice among alternative process	3	7%
Purchase of machinery	6	14%
Selection of workers	3	7%
Determining the economic aim of a process	3	7%
Establishing control limits	4	9%

The worse part is to notice that only 3 companies (7%) had used the process capability studies results in making their major quality decisions and process improvement decision (Table 5.8). All of the results mentioned above show that these small businesses are still using the traditional "rule of thumb" methods to accomplish their goals and making their decisions based on "gut feeling". Not much modern statistical tools and methods have been used to assess and improve their production process.

In fact, assess process capability using control charts and conduct a series of industrial experiments are of single importance to understanding the process, measurement and continuous process improvement.

People-based Management

This principle emphasizes on the vital role of people in the process of continuous improvement. The involvement of all the people including management, workers and the suppliers is crucial to the successful implementation of total quality management. It is obvious that systems, standards and technology themselves will not make quality. In order to achieve quality improvement, partnership relationships must be built among all people involved (management, workers and suppliers).

(1) Role of Supplier

Suppliers are important partners in the total quality management process and environment. They must be integrated into the process for the total quality to work. Companies targeting for continuous quality improvement have to

spread and push their total quality management philosophies and techniques "upstream" to their suppliers. Rather than playing short-term contractors off against each other in hopes of squeezing out better workmanship and lower prices, long-term alliances are being forged for mutual benefit. Criteria for selecting suppliers should extend beyond the price tag alone and recognize the suppliers' quality, reliability and future expectation are important for continuous improvement.

TABLE 5.9
EVALUATION OF SUPPLIERS

Evaluation Criteria	No. of firms	% of total sample (44)
Economic evaluation	21	48%
Quality evaluation	3	7%
Price evaluation	38	86%
Delivery evaluation	5	11%
No evaluation	0	0%

However, Table 5.9 shows that 86%(38) of these small businesses tend to use price and economic information as their prime considerations in evaluating their suppliers. Besides, key suppliers must be integrated into the planning and design stages of new products and services. It is important for having the commitment to improving quality of incoming products. Although the price might be higher than it had been with the negotiated contracts, direct savings from reduced inventory and reduced contracting costs more than made up the difference. Moreover, the immeasurable benefits of high-quality supply and

quick responsiveness probably overshadow all direct cost implications. The suppliers (vendors) are benefited by having a partner in improving its outputs and a predictable, consistent source of revenue.

TABLE 6.0
QUALITY OF THE SUPPLIERS

Inspection of Supplier's quality	No. of firm	% of Total Sample (44)
By lot inspection	42	95%
Analyzing control charts from your suppliers	4	9%
Checking the process capability index from your suppliers	1	2%
Checking is done in your production process	32	73%

It is evident from Table 6.0 that these small businesses have not incorporated partnership relationships with their suppliers. Almost all small businesses respondents expressed that they don't demand their suppliers to use process control charts. Table 6.0 also shows that they often have to check the quality of the products of their suppliers. Most of them (95%) use lot inspection method and 73% of them done their checking only after they have received the products from the suppliers.

TABLE 6.1

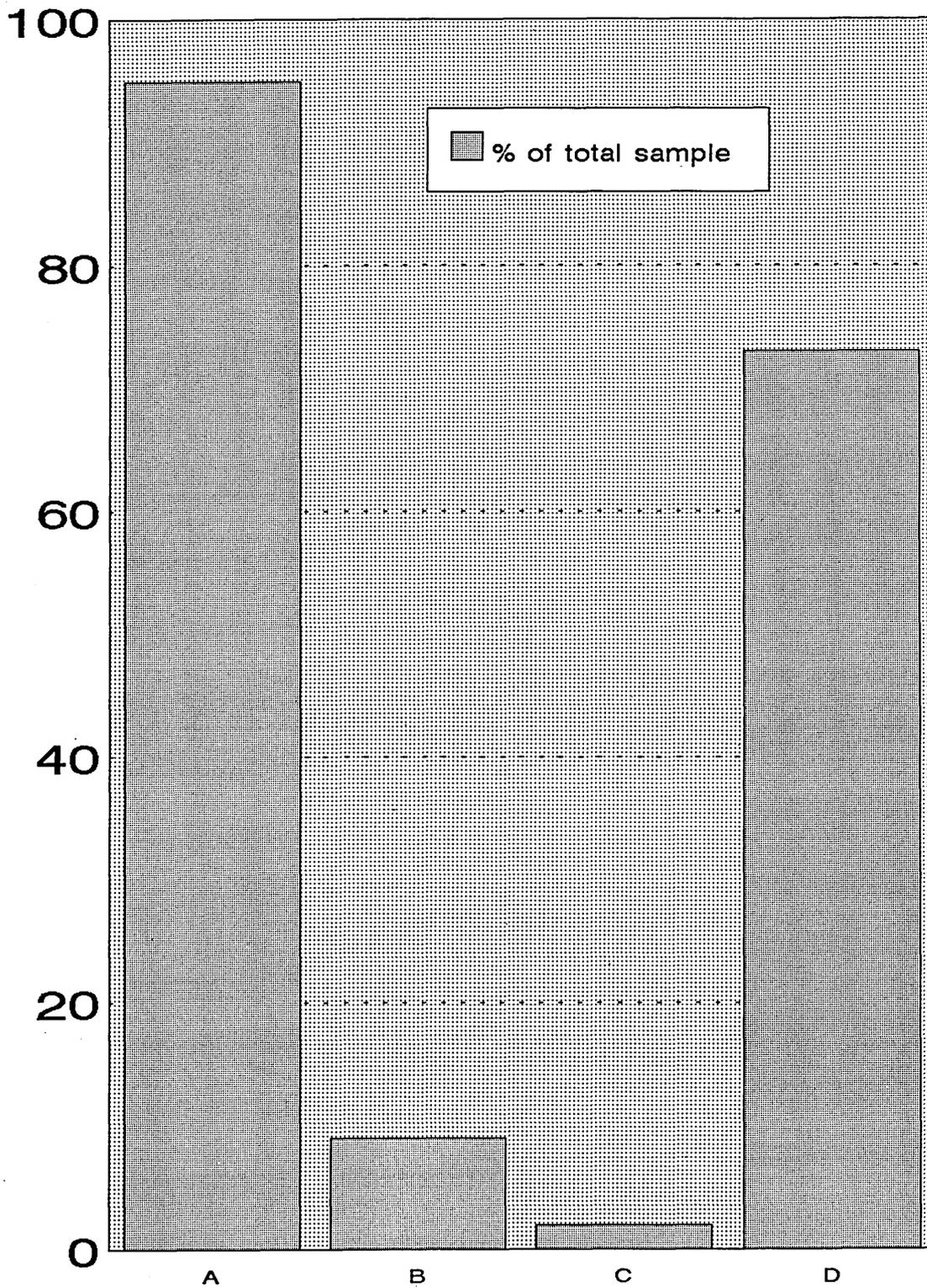
QUALITY PROBLEMS CAUSED BY LATE DELIVERIES FROM SUPPLIERS

	No. of firm	% of total sample
Yes, always	3	4.5%
Yes, several times per month	2	7%
Yes, sometimes	2	4.5%
Yes, but seldom	10	23%
Never	27	61%

It is interesting to note in Table 6.1 that about 61% of these respondents never perceive late deliveries from suppliers as part of the causes of their quality management problems.

Figure 9

Quality of The Suppliers



A = Lot inspection B = Supplier's control charts
C = Supplier's process capability index
D = Checking in production

Figure 10

Quality Problems Caused By Late Deliveries From Suppliers

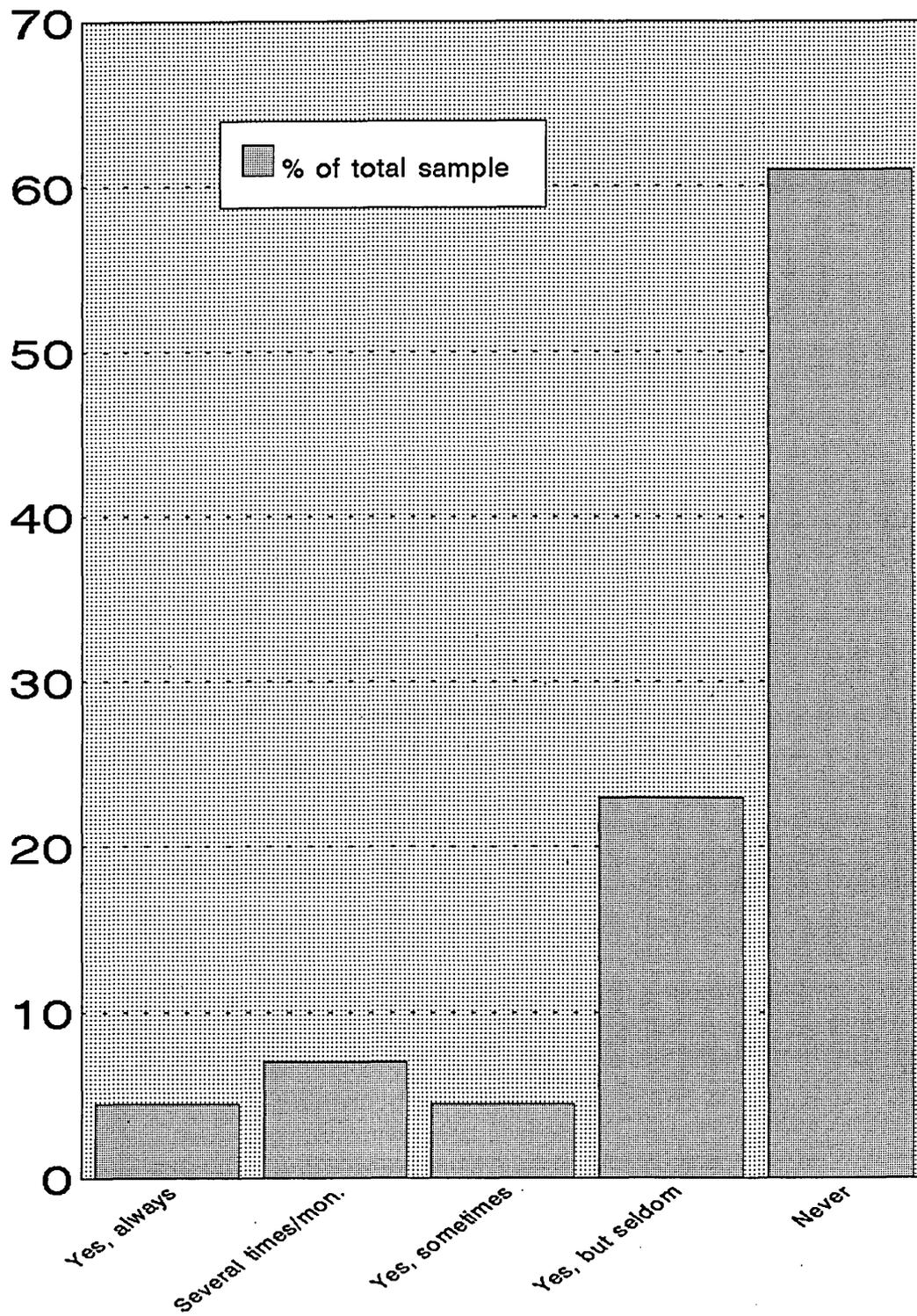


TABLE 6.2

EXCHANGE OF QC TECHNOLOGY WITH SUPPLIERS

	No. of firm	% of the total sample
Yes, always	1	2%
Sometimes	2	4.5%
Never	41	93.5%

It is also illustrated in Table 6.2 that forty-one of them (93%) never exchange quality control technology and know-how with their suppliers. They still do not recognize the importance and the role of their suppliers in the quality supplying process. This will keep the suppliers from applying their full ingenuity, their full commitment to proactive failure prevention on the customer's behalf. Actually, suppliers need to be concerned about the unanticipated results stemming from problems they didn't know about.

(2) *Role of Workforce*

Frankly, both the employees and the managers may initially skeptical of the total quality management program's potential in improving the quality of the process and in improving the competitiveness of the company. Therefore, the revamp of company's entire manufacturing process at little extra expense requires the total involvement and commitment of all people to cooperate and make improvements. Clearly, the human resources (HR) practices and policies are vital to quality improvement. Fundamental to achieving the continuous improvement process are human resource practices such as

training, hiring, compensation, performance review, communication and teamwork.

Firstly, the employee side of quality depends on employees' knowing what to do and having the ability to perform training in statistical analysis and experimental design provides employees with the tools and know-how to analyze problems and measure the effectiveness of changes. Most of them (68%) do not offer any training or educational programmes for their employees. And it was revealed in the interviews of the respondents that the average time they used for formal educational and training activities per employee per year is only 15 hours.

TABLE 6.3
TRAINING FOR EMPLOYEE/SALES AGENTS

Type of training activity	No. of firms	% of total samples
External training (supported by the company)	3	7%
Internal training (on-the-job)	5	12%
Educational courses/programme	6	14%

It can be seen from Table 6.3 that only 21 per cent of the companies have provided formalized training for their customer contact employees. Owner/managers basically feel that the experiences their sales personnel gain through the course of their work is sufficient. Their common opinion is that the on-the-job training received far outweighs any classroom training.

Unfortunately, this is inadvisable because the lessons they learn as a result of on-the-job training might well lose the company customers. This loss may seem minimal initially by these small firms, but it is vital to recognize that "it takes months to win a customer, seconds to lose one", and that a bad reputation and image spreads much faster than a good one.

(3) *Quality motivation and evaluation systems*

Two of the most significant human resource (HR) management implications of the Deming approach involve compensation and performance appraisal. Deming points out that improvements would not have occurred in an environment dominated by traditional work quotas and production bonuses. Workers will speed up the production line regardless of any effects these actions might have on the quality of output. Numerical quotas and compensation goods (performance bonuses) drive management and workers toward their objectives blindly, without regard for the company's well-being. In this sense, numerical quotas limit worker's willingness and capability to produce, the elimination of these quotas for the work force and freedom from performance-based pay gives workers time to make improvements.

TABLE 6.4

MOTIVATION OF EMPLOYEE TO ACHIEVE QUALITY GOALS

Method	No. of firms	% of total samples
Bonus for high quality	40	91%
Quality Campaigns	6	14%
Economic reward	28	64%
Q.C.C. activities	5	11%
Job rotation	3	7%

However, it is evident from Table 6.4 and Figure 11 that more than 90% of these small enterprises still rely heavily on compensation bonuses in their pursuit of quality improvements. Although job rotation and quality control circle (Q.C.C.) activities are necessary conditions for the successful implementation of TQM, only 3 to 5 of these companies had employed these methods in their quality improvement process. Also, they are very little Q.C.C. activities within these companies reflects little teamwork exist in these firms. Besides, slogans on exhortations should not be used regarding quality goals over which the workers have no control on. Quality goals must be fully understood and communicated among all employees, discussions of product on process change should consist of data-based analysis (not opinion-based analysis) and all people should be involved in planning change and determining quality goals. Unless both management and workers adopt and commit to the goal of long-term quality improvement, it would be impossible to implement and accomplish continuous quality improvement.

Figure 11

Motivation Of Employee To Achieve Quality Goals

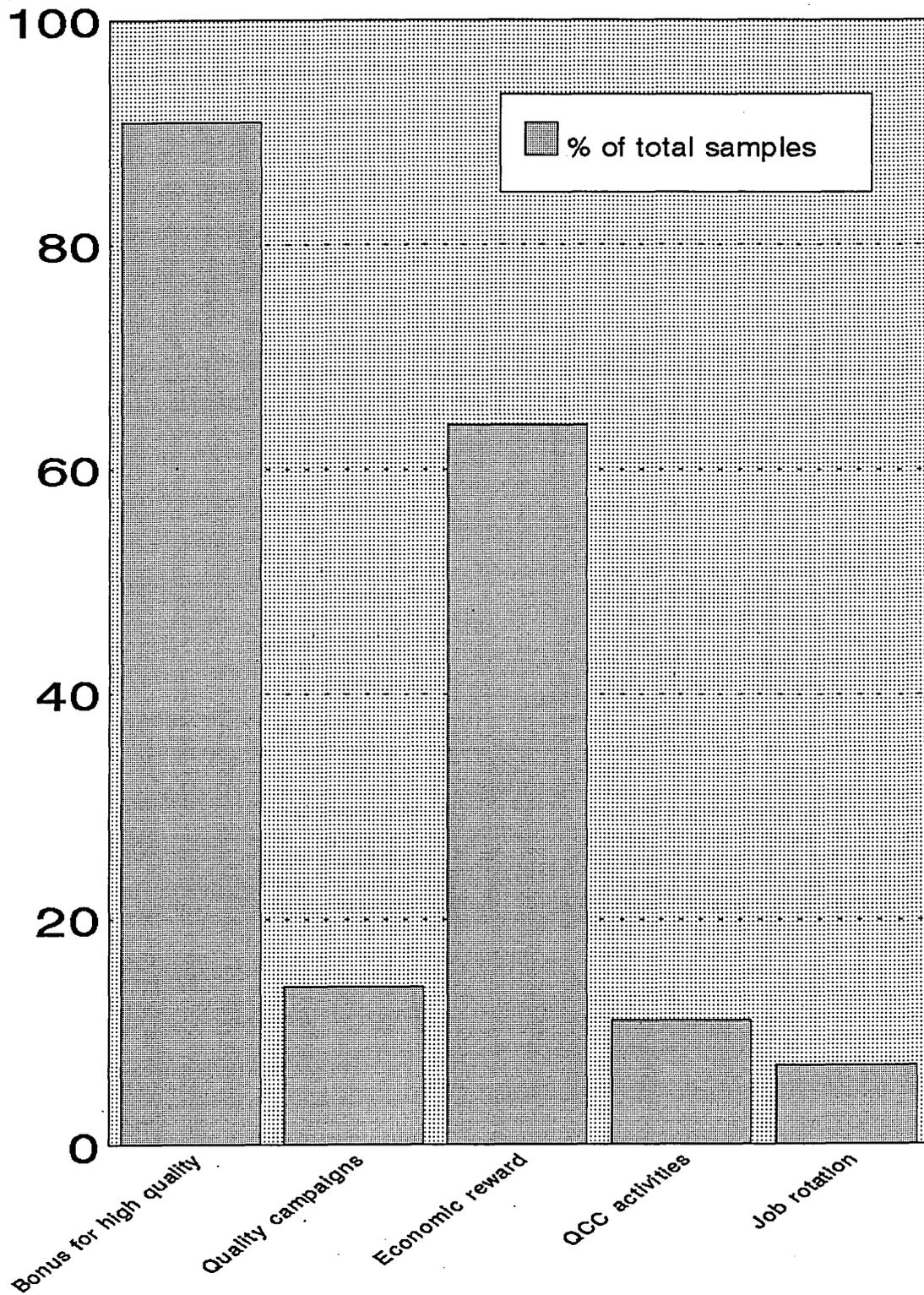


TABLE 6.5

THE SPECIFICATION OF QUALITY GOALS

Participants	No. of firms	% of total samples
By individual Department	11	25%
By Q.C. Department	30	68%
By employee himself	0	0%
By a group of employees	2	4.5%
By all departments	2	4.5%

Table 6.5 shows that these small businesses generally ignore the importance of workers' participation in defining quality goals and objectives. Very few of them communicate the quality goals and objectives to their employees.

TABLE 6.6

PARTICIPANTS IN THE AUDIT (Q.C. EFFORTS & RESULTS)

Participants	No. of firms	% of total samples
Owner-managers	36	82
Management	20	45
Q.C. department	20	45
Other department	3	7
Other employees	3	7

Table 6.6 shows that only 3 companies (7%) let all employees to know quality control results and participate in the audit. It is even true for quality

control department's employees that only 20 companies (45%) invite them to input their quality control efforts in their quality audit process. Only 3 of them (7%) ensure that detailed cost of quality records are kept and that these costs are well communicated to the workforce. This result is a bit owing to the small size of these companies, and that the fact that the owner-managers is practically working together with his/her men on the shopfloor, the levels of scrap and rework, and lost contracts caused by poor quality are easily communicated to the workforce. Hence, although the majority of these small enterprises do not keep detailed cost of quality records and do not invite their employees to participate in the audit process; the workforce is still aware of what poor quality is costing the company. Another area worth to pay attention on is the development of a quality system.

TABLE 6.7
SYSTEMS TO CHECK EMPLOYEE'S WORK

Method	No. of firms	% of total samples
Work Standards (Quotas)	40	91
Management by Objectives (numerical goals)	28	64

Table 6.7 shows 40 companies still rely on quotas methods to check their employee's work and there are virtually no formal quality system developed among them. In practice, there is a need to develop the firm's own Quality System to ensure that its principles, procedures and processes are appropriate and adequate for its business operation. Written and documented procedures

are preferable to unwritten procedures because of the high mobility rate of workers in Hong Kong and especially in small businesses, and to ensure that these procedures and practices are improved on and updated.

The next thing to consider is appraisal activities. The purpose of performance appraisal (reviews) should be directed to provide a dialogue between employee and supervisor rather than use to determine the employee salary. In building a work force dedicated to quality, offering the current employees opportunities for promotion and new job assignments rather than seeking people from outside fosters loyalty and commitment. When the personnel policies are changed to reduce antagonism and distrust, employees at all levels become willing to cooperate in the company's quality. The reason is when the employees see direct benefits in the form of stable, reliable, rewarding jobs in the future of the company, they find good reasons to cooperate.

TABLE 6.8

THE USE OF FORMAL EVALUATION RESULTS

Purposes	No. of firms	% of total samples (44)
For dismissal	22	50
For promotion	8	18
For salary and wages calculation	39	89
For education and training	3	7
For rotation	3	7
For process improvement	0	0

However, Table 6.8 shows that 89 per cent of these small businesses used the formal employee evaluation results for salary and wages calculation.

Continuous Improvement

Total Quality Management is not a quick fix or a short-term goal that will finish when a target has been met. As Deming emphasizes that the pursuit of quality is a never-ending process since competitors are always improving, customers expectation are always dynamics and changing. Before any changes are implemented, top management must commit to the total quality management philosophy and be prepared to commit resources. The transition to a quality workplace is by no means easy. The effort is neither simple, quick, nor one-shot; quality requires sustained effort and commitment. These efforts must be started from the very beginning, therefore, prevention rather inspection is one of the key concept in total quality management philosophy. Being right for the first time is essential for the zero defect and is the result of an emphasis on prevention, the diligent use of measurement, process controls, and the data-driven elimination of waste and error. It serves as a goal for continuous improvement. Through planned and systematic actions, such as documentation of work processes prevents quality problems. Quality management is all about prevention (Crosby 1979).

TABLE 6.9

DEPARTMENTS PARTICIPATE IN DESIGN REVIEW DURING
NEW PRODUCT DEVELOPMENT

Department	No. of firms	% of total samples (44)
R & D dept.	0	0
Production dept.	44	100
Purchasing dept.	2	4.5
Sales dept.	3	7
Marketing dept.	8	18
Quality dept.	3	7
Management	44	100
Finance dept.	23	52
Main customers	0	0

It is evident from table 6.9 that only 3 companies (7%) had invited the customer contact department (i.e. sales department), the quality department to participate in the design review of new product development. Further, no customers are invited in this stage. This result reflects that their quality efforts are basically reactive, not preventive.

Nevertheless, the purpose of quality management is to set up a system and a management discipline that prevents defects from happening in the company's performance cycle.

Why should anyone spend time sorting out complicated quality problems when they could have been prevented in the first place? To prevent errors rather than to fix them after the fact is essential to achieve zero defect (Crosby 1979).

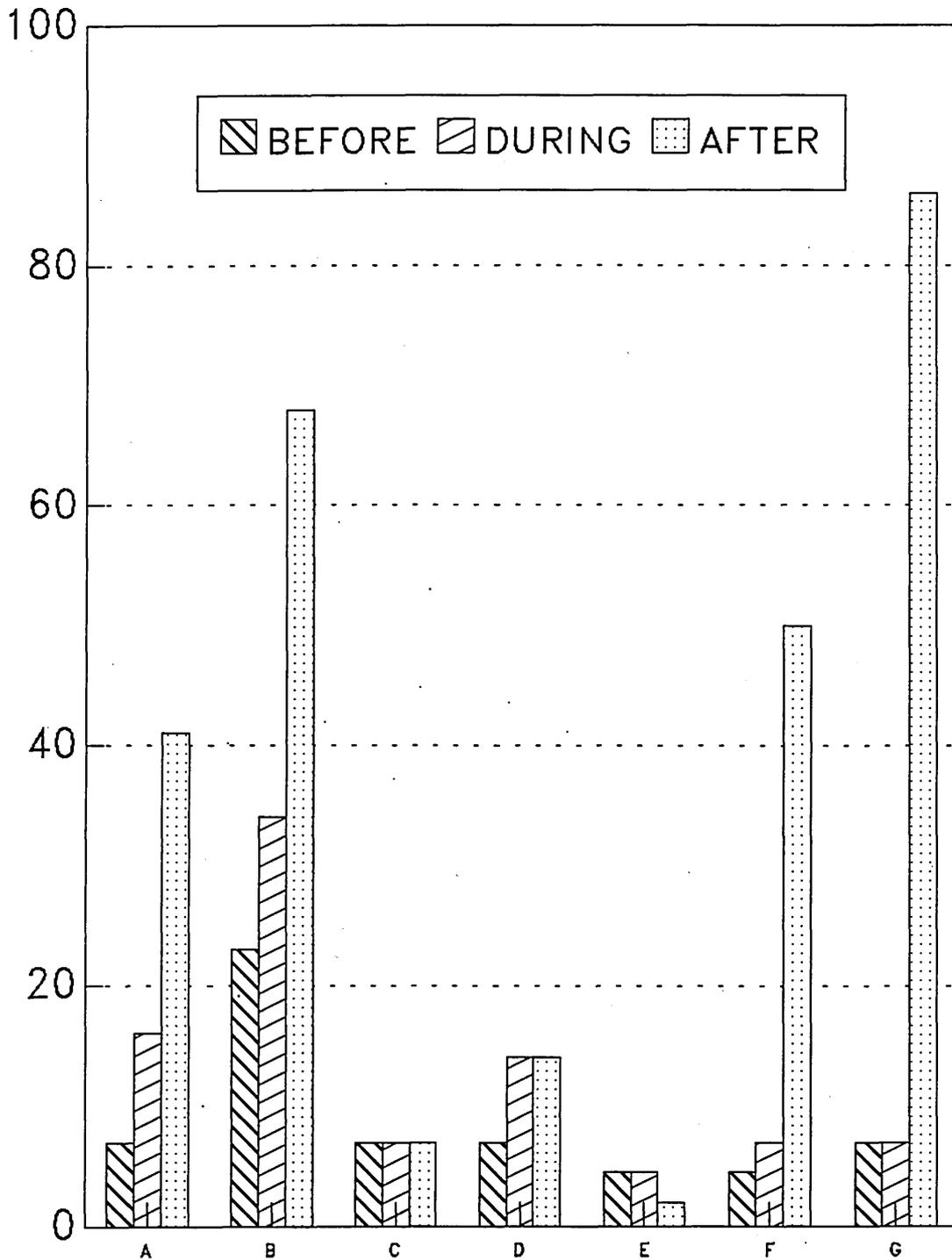
Analysis of Figure 12 gives an overall picture that these small businesses have not done much prevention jobs. Most of them are still looking for quick fix and focusing on inspection and correction activities, after the product development stage. Lastly, only 5 out of the 44 respondents have a system for preventive maintenance of their production equipment.

Today, it is generally recognized that continuous improvement of quality requires everyone's involvement (Kanji 1990). The workforce play an important role in this respect. Hence, it is extremely crucial to seek for methods in motivating them to engage actively in the quality improvement process since they are the one that know their jobs best.

Figure 13 shows that monetary rewards and bonus are the most important methods used for making employees active in quality improvement. The result demonstrates that only a few companies (7%) had employed the right methods in inducing the active employee involvement in the continuous quality improvement.

Figure 12

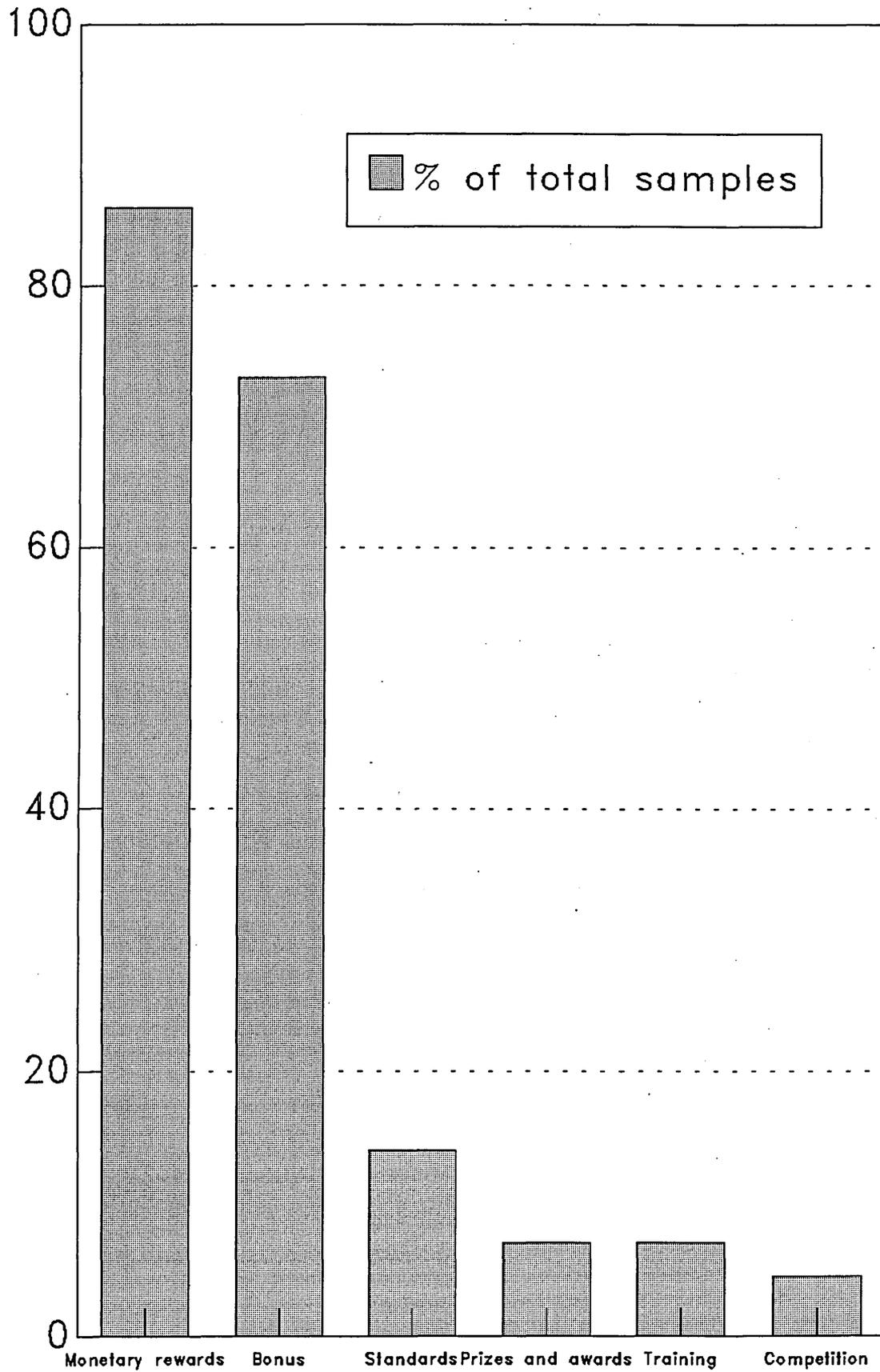
Methods of Identifying Causes of Quality Problems
Before, During, & After Development Stage



A = Cause & effect B = Group Discussion
C = Controlled experiments D = Process control charts
E = Process Capability studies F = Q.C.C. G = Customer complaints

Figure 13

Method of Ensuring Employees Active In Improvement



CHAPTER SIX CONCLUSIONS AND RECOMMENDATION

6.1 INTRODUCTION

The purpose of this chapter is to present a summary of the research effort of this thesis. Conclusions and specific contributions of this work are listed and possible extensions to the framework development are described.

6.2 DISCUSSION

In Hong Kong, where this research was done, the spread of Total Quality Management is not well advanced. However, new rules on international competition means that small businesses can no longer compete on the basis of low price. They need to compete on quality and an improvement in their competitiveness is proved to have significant effect on the local economy as they are the predominant group in this area.

This research studies serves to lay the foundation for understanding the quality strategies of Hong Kong small businesses and also represents the first stage of work towards the development of a framework to implement total Quality Management (TQM) in small firms, as these small enterprises do not have the same management capabilities, incentives and resources as do large enterprises.

Although the scale of this research is not large which makes it difficult to draw a generalization in its entirety, it does however identify the goals and role of quality strategies of the Hong Kong small firms.

Based on the previous discussion and analysis in prior section, I had further divided all the small businesses surveyed into five categories to facilitate the reveal of survey results in the findings. The five categories are as follows:

- * No plan to implement ISO 9000.
- * Planning for ISO 9000.
- * Has implemented ISO 9000.
- * Planning to implement TQM.
- * Has implemented TQM.

Each of these categories represents a distinct stage of total quality management implementation. The five categories and the number of small enterprises per category is listed in Table 7.0.

TABLE 7.0
LEVELS OF TQM IMPLEMENTATION

Categories	No. of firms	% of samples (44)
No plan for ISO9000	7	16
Planning for ISO9000	30	68
Has implemented ISO9000	4	9
Planning for TQM	2	5
No plan for TQM	1	2

According to Table 7.0, 68% of the small firms (most of them belongs to the electronic and Garment/clothing categories) are planning for ISO9000. This constitutes a very high percentages of the companies interviewed, and indicates the high level of interest in total quality management exhibited by small businesses' owner/managers. This finding reveals that most of them realize the importance of quality improvements as the key for business success. This is not a surprise as there are increasing competitive pressures (from local and international environments) felt by these smaller suppliers to large quality-

conscious companies (such as Shui On Building Contractors Ltd.). In both electronic and Garment/Clothing categories, where the trend is to reduce the number of supplier and only deal with top quality suppliers.

However, there are only 5% of the 44 companies (one from electronic, one from chemical) are planning for TQM. In fact, these two firms are still in the process of articulating what TQM really stands for. This is an extreme low percentage which can be improved if those ISO 9000 firms can be motivated to advance to total quality management (TQM). Currently, the majority of the firms interviewed do not have any plans to proceed to pursue TQM. Most of the owner/managers (from clothing, electronic & printing categories) perceive that TQM is just not applicable to their organization's operations. Their rationale is that the challenge is too great for them since they do not have the resources of large corporations and who will face bigger competitive and psychological changes than larger businesses. They often look at large companies, their programmes of training workshops, TQM consultants & coordinators, TQM manuals and are totally dumb struck. This reflects that TQM philosophy has not yet gained its ground in the small business sector. TQM is being misunderstood as something that requires massive training events with huge implementation plans. The result of this misconception is unfortunate that, only 2 out of the seven firms certified to ISO 9000 are planning for TQM, most of them see this as an end point in their organization's quality drive and effort. They do not realize that ISO 9000 are only standards which sets out how to establish, document and maintain an effective quality system, it however often falls short of the total quality management objective of delighting the customer.

They need to recognize that these standards systems are but one part of TQM. The implementation of these systems will not change management behaviour, or employee attitudes to the extent which is required to achieve a sustained advantage. From the findings, it seems that some of them are still under the

illusion that the implementation of ISO 9000 is somewhat the same as the implementation of TQM, so they have no plan for TQM. From Table 7.0, it is clear that of the four firms (two from electronic, two from Garment/clothing) that are certified to ISO 9000, half of them are reluctant to embark on the TQM route. Although Garment firms reported the quality cost of non-conformance down from 12% to close to 3%, electronic companies reported 30% increase in productivity and increased chances in the tendering for work, they are generally apprehensive of getting involved in yet another round of quality improvement activities after recovering from the costs of implementing ISO 9000. This finding indicates that the biggest obstacles to these small enterprises in adopting ISO 9000 are bureaucracy and costs associated with certification. Besides, these owner/managers also expressed that widespread resistance was encountered in their early implementation stage, especially from their employees, towards the increased amount of paper work associated with coping the ISO 9000 requirements. Unknown to them, however, all of them are on the TQM route as they have good quality practices and place strong emphasis on satisfying their customers which had already contributed to their good performance.

6.3 CONCLUSIONS

The following well concludes the causes and possible improvements to the above said problems with reference to Kanji & Asher's (1993) principles and core concepts framework.

(1) *Delighting the customer*

Only 4.5% (2) companies surveyed conduct customer surveys to determine their customers' expectation of the company and their future needs. Surveys are also not conducted to determine customer satisfaction with the company's products. This is caused by their assumption that close working relationships in small enterprises can substitute for clearly agreed requirements. They believe they know exactly what they want from each other and what their customer wants.

This survey demonstrates the need for a formal information system to determine customer expectation & satisfaction with the firm's products. Unfortunately, although most of these small enterprises do have quality goals and policies, these policies are not actively communicated to all employees, and hence the importance of quality is not felt by the employees. Their common illusion is that everyone in small organization has a perfectly clear understanding of the business direction and where they are going. This is certainly not true, as things often change more quickly in small businesses and the discipline of communicating such changes is often more lax. This failure to communicate the quality goal actually defeats the purpose of having the goal in the first place. In reality, clarity of direction does not just happen-it takes work to make it happen, and more work to ensure that everyone understands.

(2) *Management by Fact*

Most of the companies interviewed were unaware of the importance of maintaining detailed and accurate cost of quality records. They were unaware of the modern quality management tools and factors involved in the calculations of the quality costs, and that full cost of quality records comprised prevention, internal appraisal, internal failure and external failure costs. Their assumption is

they all know how well things are going in small organizations, they do not need to put things down on paper.

In fact, the huge and non-productive costs associated with poor quality and non-conformance are avoidable and appraisal costs can be reduced by identifying the causes of non-conformance and failure through management by fact which is an important aspect of TQM. It is important to detail what actual requirements, priorities, measures and levels of satisfaction are.

(3) *People-based Management*

Only 20% of the firms have their workforce formally trained in quality awareness or quality practices relevant to the company's operations.

Generally, owner/managers believe that everybody in a company this size knows exactly what their roles and responsibilities are, so there is no pressing need for training. They forget that people in small organizations are required to take on multiple roles and their basic responsibilities tend to be more complex. Without formal training in quality, people are easily get lost in the dark and tend to do what they know and not what they should be doing. This 'informal' atmosphere can be comfortable and relaxed, but a lot of things can be left undone and even more can be done several times (rework) as people begin to dabble in other areas. The survey result shows that quality training and education was lacking, no wonder the scrap and rework costs (quality costs) on average account for 25% of their annual sales.

Another illusion is that small firms are a very close organization and do not need to worry about how they organize and motivate their people. Only a few companies (4.5%) had placed careful considerations in determining the motivation of their workforce. Actually, people need to have their interests looked after, no matter how small the organization. They need to know what is

required of them, how they are doing, and what training is available to help them. They need to be appropriately appraised, recognized and rewarded. Small enterprises often carry a buzz of excitement that can be motivating in itself, but to get the very best out of people they need to understand what will really ensure their workforce's full interest and involvement in the company. The same should also apply to their suppliers (partner of the quality supplying process).

(4) *Continuous Improvement*

Another common problem is that these smaller organizations are easily content with what they had achieved. Most of them just monitor trends within their own company. Their common opinion is that they have done fine to date. They tend to be very inward-looking and are content so long as they are performing better than their neighboring competitors. Merely 3 companies are actively seeking improvement opportunities, and striving to improve continuously their product quality right in the design stage. This research showed the need for the small enterprises to apply creative technologies and innovations to their operations.

6.4 RECOMMENDATIONS

Hong Kong territory will soon become a Special Administrative Region of China in 1997 as stipulated in the Sino-British Joint Declaration (Wong 1993). In 1993, Hong Kong's total trade with China was well over \$100 billion and the indirect trade between China and Taiwan totaled \$10 billion (SCMP 1993). Hong Kong has also become Taiwan's second largest trading partner. This potential economic unification of China, Hong Kong and Taiwan may formulate the most powerful economic group of "Greater China" in Asia which presents enormous opportunities and great challenges (Chou & Tuan 1993). The key to small business survival will more than ever be determined by customer-driven quality

strategies. This continual search for excellence and customer satisfaction involves a constant review and improvement of all management and planning activities, and processes in the organization. The standard is the best practices in the industry. The following summarizes the best practices and quality strategies found in the successful small companies:

Lesson one: Competitive Benchmarking Strategy

The owner/manager of one of the certified small wonders claimed that his firm's journey to quality improvement taught them to adopt competitive benchmarking strategy. He explained competitive benchmarking is to emphasize that the objective of benchmarking is to provide the company with competitive advantage as a result of improving quality and productivity continuously.

He said that his firm being a smaller organization do not have the resources or time to develop a lot of initiatives. Competitive benchmarking strategy is a way of closing the gap between itself and the known leaders to become the best. Competitive benchmarking provides him the insights on what can be achieved and the quality target for excellence. Two business aspects of his company have been successfully benchmarked including design and management practice (e.g. Cycle Time Reduction) and customer satisfaction through small group improvement.

This owner/manager further pointed out that in commercial term, to stand still is to "die". Most small businesses will not survive unless they adopt best practices and/or develop new ones in order to "better the best".

I agree with his point as competitive benchmarking is essentially a common sense, unlike most technological strategies, this strategy is a practical process that

does not require specialist knowledge to be understood. Nor does it require any investment in equipment to undertake the process.

Lesson two: Partnership Strategy

One important lesson to learn from this survey of one of the certified small firms is that building longer term relationships with clients and suppliers is a powerful strategy that enables the firm to make improvements for the long term. Such improvements benefit everyone. Helms-Man believed that its important to get people to think of themselves as partners in the business-not just as suppliers, clients or employees. People need to change their ways of thinking. They need to ask themselves about the business, about their work, and about how things can be improved. The owner/manager said, "When people begin to think in terms of our business, our job, our responsibility, we will move forward".

Due to strategic partnership, Helms-Man has big business allies that helped it with its quality effort and gave it access to their in-house resources.

Most of the Helms-Man employee and supplier receives basic training in SPC charts, and in-depth training is given to people who actually produce and use charts and analysis tools. Hems-Man also feels it is important for employees to learn about customers and their needs.

Therefore, Helms-Man sends hourly employees to visit customers and work with their hourly workers to hear what they like and dislike about Helms-Man's products and how they use them. In turn, clients' representatives go to Helms-Man to tell all employees what they are doing, why it is important, and the rewards that come from quality management. Besides, it also sends employees to seminars offered by its customers.

I also agree that this kind of communication is invaluable because every participants get to know the partner on the other end. With the customer/supplier partnership between clients, employees and suppliers fully-developed, third-party certification often plays an important early role, but many become relatively less important as the partnerships develops and progresses beyond the requirements of ISO 9000 contractual standards.

Helms-Man has made a connection between business and quality: Quality helps the commercial side and the commercial side helps quality. The continuity of the partnership relationship results in continuous improvements of its systems and processes of working together.

Its experience is a great deal of money to be saved and benefits to be gained by not beginning each project anew. Most critical is less capital tied up in supplies on site due to operation of Just-in-Time delivery system with suppliers. As a matter of fact, the mostly disadvantage mentioned by small businesses was financial constraint.

Lesson three: Quality Group Strategy

Another lesson learnt by one small winner is that the concept of total quality management does not mean anything different to them than to a larger organization. Improving quality and productivity in small businesses is not much different than in larger ones. The same quality processes (brainstorming, problem solving etc.), tools (flowcharts, Pareto analysis etc), and elements (top management commitment, employee participation etc.) are needed.

I agree, the difference, of course is not in the concept, but in its practical application and that is where we need to focus our attention. There is one important difference between big companies and small ones: resources.

Small concerns usually don't have large amounts of extra cash available to pay for the initial costs of implementing a quality process. They are lack of adequate management capabilities, and initiative among them.

For small companies, introducing total quality management can be a lonely and expensive business. But there are local institutions that offer affordable assistance to small concerns. Help may be on the way.

Good-Future's manager claimed that the quality management group strategy has proved practical. This strategy involves setting up an industry-focused group. The group consists of between seven to ten owner/managers of small firms in the same trade who have agreed to set up a complete quality system in their firms in accordance to ISO 9000. The group work using examples from similar firms, and introduce the elements of the quality system step by step. The group members exchange their experiences, while the consultant from the Management Development Center (MDC) of Hong Kong acts as facilitator, determining the pace, commenting on the results, and providing the examples.

"This strategy stimulated us to continue working on quality improvements and innovations through regular meetings. We gradually form a network, even contacting each other outside the meetings to discuss business concerns." explained by Good-Future's manager.

Overall speaking, Good-Future's management feel that participants have been very positive about the group approach to quality.

In fact, the key feature of this strategy is the facilitated meetings which produce new impulses for innovative quality activities. Moreover, the costs of obtaining the examples (like the quality manual and test cases of other companies within

the industry) and the services of the MDC consultant are very low in comparison to the costs of hiring external consultants. This suits especially with small concerns which usually do not have the resources to implement a quality system without external support. It means the joint implementation of a quality system produces quality results at minimum costs. Their shared experiences result in improvements in business processes and establishes a quality system that is eligible for the continuous search for total quality.

Each of the above lessons offer unique accounts of what kept these small concerns on the road to quality when others strayed or lost sight of their destination. There are a lot of theories on and strategies to TQM. But by using these lessons selectively, your journey to TQM will be a bit easier. Bear in mind, however, all concede that there is no one path or right way to approach, implement, and measure quality improvement. Each small business is unique that it must create its own strategy, way and work at a pace it can afford. With the enthusiasm and can-do attitude, the leaders or owner/managers can light the way, confront and conquer the setbacks and frustrations associated with the continuous quality improvement process.

REFERENCES

- ARMSTRONG, M. (ed.) (1992) *Strategies for Human Resource Management: A Total Business Approach* (London: Kogan Page).
- BANK, J. (1992) *The Essence of Total Quality Management* (Prentice Hall International (UK) Ltd.).
- BOX, G.E.P. & RAMIREZ JOSE (1991) Cumulative Score Charts, *Quality and Reliability Engineering*, 8, pp.17-27.
- BYGRAVE, W.D. (1994) *The Portable MBA in Entrepreneurship* (WILEY).
- BOLTON, J.E. (1972) *Small Firms, Report of the Committee of Inquiry on Small Firms* (HMSO, London).
- CASCO, (1980), *ISO/ITC Handbook Certification-Principles and Practice* (ISO Central Secretariat, Switzerland).
- CASCO (1992), *ISO/IEC 9000 Compendium of International Standards for Quality Management*, 2nd ed. (Switzerland, ISO Central Secretariat).
- _____, *Hong Kong Annual Report of Statistics*, Census and Statistics Department (Hong Kong, various dates).
- CHOU, Y., CHANG, P.L., & TUAN, C. (1993) Total Quality Control Chinese Style and its Management Implications-Taiwan versus China, *Total Quality Management*, 4, pp.283-305.
- CROSBY, P.B., (1979), *Quality is Free, The Art of Making Quality Certain* (N.Y.: New American Library, Mentor).
- DALE, B.G. & COOPER, C. (1992) *Total Quality and Human Resources* (Oxford, Blackwell).
- DALE, B.G. (1990), *Managing Quality*, 2nd ed. (Prentice-Hall International (UK) Ltd.).
- DAHLGAARD, J., KRISTENSEN, J. & KANJI, G.K., (1994) *Total Quality Journey: A Journey Without and an End* (Oxford, Carfax Publishing Company)
- DAHLGAARD, J.J., KRISTENSEN, K. & KANJI, G.K. (1993), *Quality Cost and Total Quality Management*, *Total Quality Management*, 3, pp.211-222.
- DEMING, E.W. (1982) *Quality, Productivity and Competitive Position* (Cambridge, MA, MIT Centre for Advanced Engineering Study).

DEMING, W.E. (1986) Out of the Crisis (Cambridge, MA, MIT Centre for Advanced Engineering Study).

DRUCKER, P.F. (1985) The Discipline of Innovation, Harvard Business Review, May-June, pp.67-72.

DRUCKER, P. (1992), Managing for the Future: The 1990's and Beyond (N.Y: Truman Talley Books).

FEIGENBAUM, A.V. (1951), Total Quality Control, (N.Y.: McGraw-Hill Inc.)

FEIGENBAUM, A.V. (1983) Total Quality Control Handbook (N.Y.: McGraw Hill Inc.)

FEIGENBAUM, A.V. (1990) Total Quality-an international imperative, Total Quality Control, 41, pp.1471-1478.

GEORGE, S. & WEIMERSKIROH, A., The Portable MBA in Total Quality Management (WILEY).

GITLOW, H.S. (1987) The Deming Guide to Quality and Competitive position (New Jersey, Prentice-Hall).

HARVARD BUSINESS REVIEW (1990) Unconditional Quality (Harvard Business School Press, Massachusetts).

_____, Annual Report of Hong Kong Government (Hong Kong, various dates).

_____, Annual Report of Hong Kong Productivity Centre (Hong Kong, various dates).

_____, Annual Report of Hong Kong Trade Development Council (Hong Kong, various dates).

IMAI, MASAOKI (1991), KAIZEN - The Key To Japan's Competitive Success, (Singapore, McGraw-Hill).

ISHIKAWA, K. (1990) Introduction to Quality Control (Tokyo, 3A Corporation), p.44.

ISHIKAWA, K. & Kondo, Y. (1969) Education and Training for Quality Control in Japanese industry, Quality, 4, pp.90-96.

JURAN, J.M. (1989), *Leadership for Quality: An Executive Handbook* (N.Y.: The Free Press).

JURAN, J.M. (1991), *Juran's New Quality Road Map-Planning, Setting and Reaching Quality Goals* (N.Y.: The Free Press)

JURAN, J.M. (1973) *The Taylor System and Quality Control*, *Quality Progress*, 6, p.42.

JURAN, J.M. (1981) *Product quality - a prescription for the West*, *Proceedings of the 25th Conference EOQC*, Paris, June, 3, pp.221-242.

JURAN, J.M. (1970) *Quality Planning and Analysis* (N.Y.: The Free Press).

JURAN, J.M. & GRYNA, F.M. (1988) *Juran's Quality control Handbook*, 4th Edition (N.Y. McGraw-Hill).

KANJI, G.K. & BARKER, R.L. (1990) *Implementation of Total Quality Management*, *Total Quality Management*, 1, pp.375-389.

KANJI, G.K. (1990) *Total Quality Management: the second industrial revolution*, *Total Quality Management*, 1, pp. 3-12.

KANJI, G.K. & ASHER, M. (1993) *Total Quality Management Process: A Systematic Approach*. (Oxford, Carfax Publishing Company).

KANJI, G.K. (1994) *Total Quality Management and Statistical Understanding*, *Total Quality Management*, 5, pp.105-115.

KANJI, G.K. KRISTENSEN, K.K., & DAHLGAARD, J.J., (1993) *Total Quality Management as a Strategic Variable*, 3, pp.3-8.

KRISTENSEN, K., KANJI, G.K. & DAHLGAARD, J.J. (1993) *On Measurement of Customer Satisfaction*, *Total Quality Management*, 3, pp.123-128.

KONDO, Y. (1993) *Quality Education in Japan*, *Total Quality Management*, pp.115-125.

KONDO, Y. (1990) *Emphases of Japanese Total Quality Management in the 1980s*, *Total Quality Management*, 1 pp.23-32.

KONDO, Y. (1988) *Quality Through the Millenia*, *Quality Progress*, 21, p.83.

KONDO, Y. (1979) *JUSE-a center of quality control in Japan*, *Quality Progress*, August, pp.14-15.

MORENO-LUZON, M.D., Can Total Quality Management Make Small Firms Competitive?, Total Quality Management, 4, pp.165-181.

MOEN, R.D., NOLAN, T.W., & PROVOST, L.P. (1991) Improving Quality Through Planned Experimentation. (N.Y., MCGraw-Hill).

OAKLAND, J.S. (1989), Total Quality Management (Oxford: Butterworth-Heinemann).

PRICE, F. (1990) Right Every Time, Using the Deming Approach (Aldershot: Gower).

_____, Report of Employment, Vacancies and Payroll Statistics; Census and Statistics Department (Hong Kong Government Publishing House, various dates).

SIT, S.H. & Wong, S.L. (1989), Small and Medium Industries in an Export-Oriented Economy: The Case of Hong Kong, (University of Hong Kong Press).

SNEE, R. (1986), Managing on the Edge, (London: Bloombury).

_____, South China Morning Post (Hong Kong Newspaper, various dates).

STEBBING, L., (1990), Quality Management in the service Industry (N.Y.) Ellis Horwood Limited)

STEBBING, L. (1986), Quality Assurance: the route to efficiency and competitiveness, 2nd ed. (England, Ellis Horwood Limited).

TAGUCHI, G. (1989), Introduction to Quality Engineering, Version 2.1. (MI: American Supplier Institute)

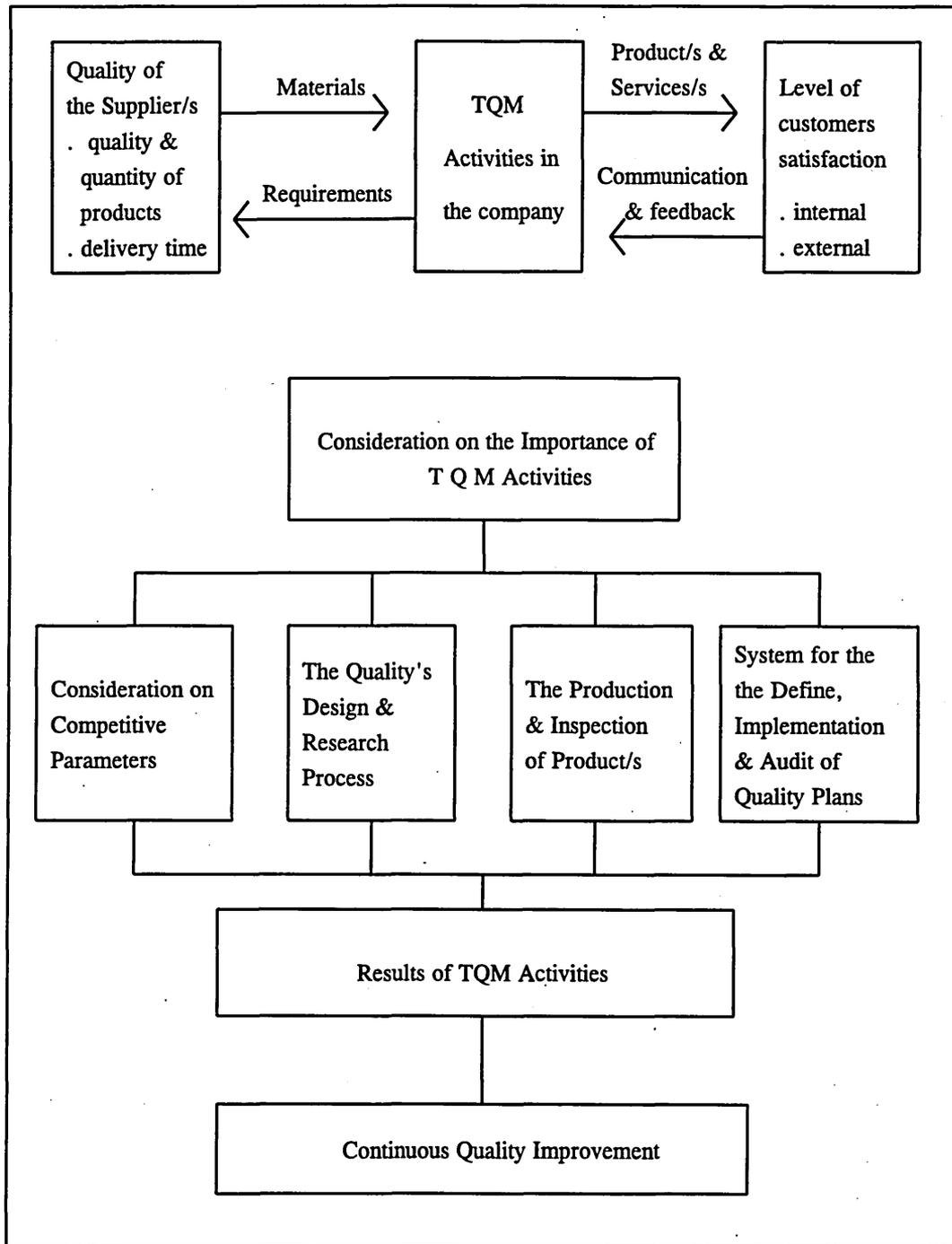
TEBOUL, J. (1991), Managing Quality Dynamics (Prentice-Hall International (U.K.) Ltd)

TOWNSEND, P.L. (1989) Commit to Quality (N.Y.: John Wiley).

WALTON, M. (1986), The Deming Management Method (N.Y.: The Putnam Publishing Group).

WONG, Y.L. (1993), Quality Strategy of Small Business, Proceedings of the 2nd Asian Congress on Quality & Reliability, ACQR, Beijing, May 30, pp83-86.

RATIONALE FOR THE STRUCTURE OF THE QUESTIONNAIRE



DESCRIPTION OF THE QUESTIONNAIRE

		Question Number	Text
General Information	Geographic Location	1	Company Name, address and contact person
	Characteristic of the company	2,57	Company Size and Source of Capital
External Environment	Types of industry	3,4	Type of industry and main product categories
	Suppliers	49,53	Active in exchange of QC technology and know how with its suppliers
	Relation	50,52 54	Passive in inspection of the quality of the suppliers Extent of close relationship with suppliers
Analysis	Customers	35,37	Active in the distribution of product information to the target market
	Relation	40-44 36,38,39	Methods of collecting and analyzing information about the target market Methods of dealing with principals and customers

APPENDIX B (CONT)

		Question Number	Text
Internal	Competitive Parameters	5,6	Consideration on the importance of competitive advantage and competitive parameters
	The Research and Design in Quality	11,12	Product development functions and its connection with the Q.C. methods (techniques)
		10	Involvement of Personnel in defining quality goals
		7,8	How to use quality document (QD)
Environment	Production and Inspection of the Products	9	Development of quality manual
		13	Method utilized to identify causes of quality problems after product development stage
		45-48 55,56	Utilization of JIT, PCS, PCC, AOQ, LTPD principles and methods
Analysis	Systems for the define, implementation and audit of quality plans	51	Utilization of the "Concept in statistical control" when checking production processes
		17,18,19	Define quality goals for individual and department
		22,25	Systems for communication and motivation of quality goals
		20,21	Application of the "MBO" concept
		16	System to check the works
		23,24	Training and Development of employees
		26-28	Numbers of Q.C. activities
		29-31,34	Systems for two-way communication
32,33	Performance Appraisal of employees and utilization of the result		
14,15	Audit of quality control efforts and results		

您好：

本問卷是有關（全面品質管理）全港學術性研究的一部份，這項研究的目的是希望了解品質管理對小型工業的影響。現誠邀貴公司提供寶貴資料，貴公司所惠賜之資料完全僅供整體分析和學術性研究之用，絕對保密。謝謝您的合作！

嶺南學院管理學系
王玉蘭敬上

英國雪菲爾德哈林大學統計學系

編號：_____

1. 公司名稱：_____

2. 資本來源：

____本地

____日資

____歐資

____美資

____外資 (日、歐、美以外的國家)

____合資 (對象 (國名) _____, 外資所佔比例 _____)

3. 貴公司是屬於何種製造業：

紡織業 _____

成衣業 _____

電子業 _____

玩具業 _____

五金業 _____

塑膠業 _____

印刷業 _____

其他 (請註明) _____

4. 請寫出 貴公司最主要的三種產品：

a. _____

b. _____

c. _____

5. 貴公司對於下列各競爭因素的看法是： (每小題請單選)

	毫不重要	不重要	稍微重要	重要	非常重要
a. 市場價格	_____	_____	_____	_____	_____
b. 產品品質	_____	_____	_____	_____	_____
c. 產品運送	_____	_____	_____	_____	_____
d. 廣告	_____	_____	_____	_____	_____
e. 售前服務	_____	_____	_____	_____	_____
f. 售後服務	_____	_____	_____	_____	_____
g. 貨色齊全	_____	_____	_____	_____	_____
h. 產品保證	_____	_____	_____	_____	_____
i. 抱怨的處理	_____	_____	_____	_____	_____
j. 產品功能	_____	_____	_____	_____	_____

6. 試估計以下幾點之百分比為何：

- (a) 有____%的顧客認為 貴公司之產品 (或服務) 優於競爭對手的產品 (或服務)。
- (b) 有____%的顧客認為 貴公司之產品 (或服務) 劣於競爭對手的產品 (或服務)。
- (c) 有____%的顧客認為 貴公司之產品 (或服務) 相等於競爭對手的產品 (或服務)。

7. 貴公司是否擁有關於描述產品品質, 或品質管制的文件?
(請單選)

1 ____是 2 ____否

8. 若第七題的答案填 "是", 請問 貴公司如何使用該文件:
(每小題請單選)

是 否

- a. 該文件僅在高階管理者決定品質策略時才被使用 ____ ____
- b. 該文件被中階管理者用來做品質規劃之用 ____ ____
- c. 該文件沒有傳達給全體員工 ____ ____
- d. 該文件時時不斷地傳達給全體員工 ____ ____
- e. 該文件對於品質管制訓練是重要的 ____ ____
- f. 該文件對於創造品質文化是重要的 ____ ____
- g. 所有藍領階級員工都知道該品質文件 ____ ____

9. 貴公司是否擁有品質手冊? (有關於品質程序之手冊)

1 ____是 2 ____否

10. 於訂定品質目標時, 請問是否參考下列人員之意見?
(每小題請單選)

- | | 有 | 沒有 |
|-------------------|--------|--------|
| a. 高階管理者 | 1 ____ | 2 ____ |
| b. 中階管理者 | 1 ____ | 2 ____ |
| c. 主要顧客 | 1 ____ | 2 ____ |
| d. 其他 (請描述) _____ | | |

1.1. 於新產品開發期間，請問以下各部門在各階段參與設計之情形？

部 門	預備階段		期中階段		最後階段	
	有	沒有	有	沒有	有	沒有
a. 研發部門	1__	2__	1__	2__	1__	2__
b. 生產計劃部門	1__	2__	1__	2__	1__	2__
c. 採購部門	1__	2__	1__	2__	1__	2__
d. 生產部門	1__	2__	1__	2__	1__	2__
e. 銷售部門	1__	2__	1__	2__	1__	2__
f. 行銷部門	1__	2__	1__	2__	1__	2__
g. 品管部門	1__	2__	1__	2__	1__	2__
h. 高階管理者	1__	2__	1__	2__	1__	2__
i. 財務部門	1__	2__	1__	2__	1__	2__
j. 主要顧客	1__	2__	1__	2__	1__	2__
k. 其他 (請描述)	_____					

1.2. 請問 貴公司於產品開發期間是否利用下列各方法來發掘一些潛在的品質問題？ (每小題請單選)

	有	沒有
a. 因果圖	1__	2__
b. 群體討論法	1__	2__
c. 品質功能展開法	1__	2__
d. 實驗控制法 (control experiments)	1__	2__
e. 可靠度分析	1__	2__
f. 產品壽命測試	1__	2__
g. 設計審查法 (design review)	1__	2__
h. 顧客反應	1__	2__
i. 其他 (請描述)	_____	

1.3. 請問 貴公司於產品發展完成後之階段，是否利用下列各方法來發掘一有關品質問題的原因：

	有	沒有
a. 因果圖	1__	2__
b. 群體討論法	1__	2__
c. 實驗控制法	1__	2__
d. 求助於專家顧問	1__	2__
e. 流程控制圖	1__	2__
f. 製程能力指標研究	1__	2__
g. 品質圈	1__	2__
h. 顧客抱怨	1__	2__
i. 其他 (請描述)	_____	

1.4. 貴公司是否定期審查品質管制的成效？ (請單選)

1__是 2__否

15. 若上題答案是“有”，則請問下列人物是否參與審查？

	有	沒有
a. 高階管理者	1 ___	2 ___
b. 部門管理者 (如：經理)	1 ___	2 ___
c. 中階部門之管理者 (如：科長)	1 ___	2 ___
d. 所有員工	1 ___	2 ___
e. 品管部門	1 ___	2 ___
f. 其他的管理部門	1 ___	2 ___
g. 其他 (請描述) _____		

16. 貴公司是否有正式的制度來檢查各部門的工作？ (請單選)

- 1 ___ 是的，在各部門都有
- 2 ___ 是的，但只在某些部門裡有
- 3 ___ 沒有

17. 當定義員工或一群員工之工作時，請問工作之品質目標被敘述的情形為何？ (請單選)

- 1 ___ 總是詳加敘述
- 2 ___ 總是做一般性之敘述
- 3 ___ 有時詳加敘述，有時做一般性敘述
- 4 ___ 沒有特別的品質目標

18. 當定義一個部門的工作時，請問工作之品質目標被敘述的情形為何？ (請單選)

- 1 ___ 總是詳加敘述
- 2 ___ 總是做一般性之敘述
- 3 ___ 有時詳加敘述，有時做一般性之敘述
- 4 ___ 沒有特別的品質目標

19. 貴公司如何定義一個員工的工作？

	是	否
a. 透過管理者對目標的定義	1 ___	2 ___
b. 透過員工本人對目標的定義	1 ___	2 ___
c. 透過一群員工對目標的定義	1 ___	2 ___
d. 其他 (請描述) _____		

20. 貴公司於工作現場是否實施工作標準 (如工作進度) ？ (請單選)

- 1 ___ 是
- 2 ___ 否

1 ___ 是 2 ___ 否

22. 貴公司是否透過以下方式與員工溝通目標？

	是	否
a. 透過操作指導手冊	1 ___	2 ___
b. 透過視覺教導	1 ___	2 ___
c. 透過口頭教導	1 ___	2 ___
d. 透過現場實地訓練	1 ___	2 ___
e. 透過書面的工作描述	1 ___	2 ___
f. 其他 (請描述) _____		

23. 每年每位員工參與教育訓練活動的小時數大約是_____小時。

24. 貴公司是否支持員工志願參加有關工作之教育課程
(該課程是外界舉辦的) ? (請單選)

總是如此 1 ___
有時候會 2 ___
從不 3 ___

25. 貴公司如何來激勵員工去達到品質目標？

	是	否
a. 達到高品質目標時給紅利	1 ___	2 ___
b. 頒發品質獎章	1 ___	2 ___
c. 實質的報酬	1 ___	2 ___
d. 透過品管圈活動	1 ___	2 ___
e. 工作輪調	1 ___	2 ___
f. 其他 (請描述) _____		

26. 貴公司品質圈的圈數共有_____圈。

27. 參與品管圈活動的員工來自生產部門的佔_____%; 來自其他部門的佔_____%。

28. 貴公司各個品管圈的活動情形為何？

非常積極的佔 _____ %
積極的佔 _____ %
令人睡覺的佔 _____ %
共 100%

29. 貴公司是否有一套辦法可以讓員工提出對品質改進的建議？
(請單選)

1 ___ 是 2 ___ 否

30. 若上題答“是”，貴公司是否接受這些建議？ (請單選)

1 ___ 僅接受個人之建議
2 ___ 僅接受團體之建議
3 ___ 以上兩者都接受

31. 貴公司如何使員工積極地提出品質改進的建議？

	是	否
a. 金錢上的報酬	1 ___	2 ___
b. 將建議的數量訂成目標或標準	1 ___	2 ___
c. 授與獎章或獎狀	1 ___	2 ___
d. 透過比賽	1 ___	2 ___
e. 透過教育訓練	1 ___	2 ___
f. 透過紅利制度	1 ___	2 ___
g. 其他 (請描述) _____		

32. 貴公司是否有一套制度來評估員工？

1 ___ 是 2 ___ 否

33. 若上題答“是”，則請問 貴公司是否利用評估的結果來從事下列各項事情？

	是	否
a. 解雇不適合的人員	1 ___	2 ___
b. 晉升績優的人員	1 ___	2 ___
c. 決定員工之薪資或津貼	1 ___	2 ___
d. 給予再教育	1 ___	2 ___
e. 調職	1 ___	2 ___
f. 其他 (請描述) _____		

34. 貴公司的管理者和員工分別是如何得悉品質出了問題？
(可複選)

	非正式的 面對面 討論	非正式的 群體討論	書面報告	正式會議	透過建議 系統	其他 (請描
a. 管理者	_____	_____	_____	_____	_____	_____
b. 員工	_____	_____	_____	_____	_____	_____

35. 貴公司如何向銷售人員傳達有關新產品或改變既有產品之訊息？

	是	否
a. 根本不傳達	1 ___	2 ___
b. 與銷售人員開會討論	1 ___	2 ___
c. 舉行研討會	1 ___	2 ___
d. 透過小冊子	1 ___	2 ___
e. 非正式討論	1 ___	2 ___
f. 其他 (請描述) _____		

36. 貴公司是否有一套挑選銷售代理商之制度？

- 1 ___ 是
2 ___ 否, 但我們已有銷售代理商了
3 ___ 否, 我們不用銷售代理商

37. 貴公司是否有一正式制度來編訂或核對 貴公司產品的使用說明書？ (請單選)

- 1 ___ 是 ; 2 ___ 否

38. 貴公司是否有相關課程來教育您的顧客？ (請單選)

- 1 ___ 是 ; 2 ___ 否

39. 貴公司是否有一套課程來教育您的代理商？ (請單選)

- 1 ___ 是 ; 2 ___ 否

40. 貴公司是否使用市場試銷的技術？ (請單選)

- 1 ___ 是 ; 2 ___ 否

41. 貴公司是否有一制度來檢查銷售及行銷活動是否符合公司規章？

- 1 ___ 是 ; 2 ___ 否

42. 貴公司是否有一些制度來分別檢查下列活動？

	是	否
a. 顧客是否很滿意你們的產品	1 ___	2 ___
b. 貨品是否正確地送到顧客的手中	1 ___	2 ___
c. 你們的代理商是否遵照公司的規定	1 ___	2 ___
d. 銷售人員是否達到標準	1 ___	2 ___
e. 貨品是否準時送達	1 ___	2 ___
f. 其他有關品質的事項 (請描述) _____		

4.3. 貴公司如何去意識到顧客需求在改變？

	是	否
a. 從銷售人員或代理商得到資訊	1 ___	2 ___
b. 透過例行性的市場調查	1 ___	2 ___
c. 透過特別的調查	1 ___	2 ___
d. 其他 (請描述) _____		

4.4. 貴公司行銷部門是利用何種技術來分析回收的資料？

	是	否
a. 集群分析	1 ___	2 ___
b. 因素分析	1 ___	2 ___
c. 多元尺度法	1 ___	2 ___
d. 知覺上的感應	1 ___	2 ___
e. 其他技術 (請描述) _____	1 ___	2 ___

4.5. 當在從事生產計劃時是否利用“及時原則”(Just in time principle) ?
(請單選)

- 1 ___ 是的
- 2 ___ 有時候如此
- 3 ___ 從沒有

5.1. 當在檢查製程時，是否使用統計管制的觀念？ (請單選)

- 1 ___ 總是如此
- 2 ___ 有時候如此
- 3 ___ 從不
- 4 ___ 不知有此觀念

5.2. 貴公司利用何種資訊來評估供應商？

	是	否
a. 經濟性的資訊	1 ___	2 ___
b. 品質上的資訊	1 ___	2 ___
c. 價格上的資訊	1 ___	2 ___
d. 運送上的資訊	1 ___	2 ___
e. 不需任何資訊	1 ___	2 ___

5.3. 貴公司是否將品管技術或訣竅 (know-how) 移轉給供應商？ (請單選)

- 1 ___ 總是如此
- 2 ___ 有時候如此
- 3 ___ 從不

54. 貴公司是否曾因為供應商之運送延遲而造成品質上的問題？
(請單選)

- 1 ___ 是的, 總是如此
- 2 ___ 每個月總有幾次
- 3 ___ 有時候會發生
- 4 ___ 很少
- 5 ___ 從不

55. 貴公司是否有一制度來預防維護生產之設備？ (請單選)

- 1 ___ 是
- 2 ___ 否

56. 貴公司是否使用"平均出廠品質" (average outgoing quality), "批不良率之容忍度" (lot tolerance percentage defective) 或相似的觀念？

- 1 ___ 有
- 2 ___ 沒有
- 3 ___ 不知道有這些觀念

57. 公司規模：
在下列各年度之全職員工人數, 營業總額及資產總額分別為：

	員工人數	營業總額	資產總額
1988	_____	_____	_____
1989	_____	_____	_____
1990	_____	_____	_____
1991	_____	_____	_____
1992	_____	_____	_____

SURVEY WORK SCHEDULE

STEPS IN THE DIRECT SELLING PROCESS	DESCRIPTION OF ACTIVITIES	DAY & TIME
<u>Step 1</u>	<ul style="list-style-type: none"> . use "Guide Maps" to locate industrial buildings in the assigned district. . Copy the tenant list from each of the building directory. 	Saturday (1:00 - 5:00) Sunday (whole day)
Locating and Prospecting	<ul style="list-style-type: none"> . prepare some blank prospect list forms. . check the telephone numbers of prospects from the telephone company and telephone directories. . prepare several packages of the following: <ul style="list-style-type: none"> a. name card b. cover letter c. questionnaire d. souvenir 	Saturday & Sunday (Night)
<u>Step 2</u> Pre approach	<ul style="list-style-type: none"> . make phone calls to get the names of owner-managers. . call back to arrange meeting with the prospect. . for those refuse to offer interview, drop the package of materials into the pigeon hole of the prospect. 	Mon to Fri 9:00 - 11:30 a.m.
<u>Step 3</u> Approach	<ul style="list-style-type: none"> . visit the prospect . warm up the interviewee by (self-introduction, exchange name cards, explain the purpose of the survey and present souvenir). 	Mon to Fri (subject to appointment time)
<u>Step 4</u> Presentation	<ul style="list-style-type: none"> . present the cover letter. . start the interview. 	Saturday (9:00 - 1:00)
<u>Step 5</u> The Close	<ul style="list-style-type: none"> . thanks for the interview. . ask for the possibility of future cooperation. . ask for referrals. 	
<u>Step 6</u> Follow Up	<ul style="list-style-type: none"> . call back those prospects who were hesitate in offering interview in the first instant on the following day. 	