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Total Quality Management and Organizational Performance - A Marketing Perspective

by

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Abstract

Although many researchers suggest that total quality management (TQM) is likely to improve a company's competitive position, particularly with regard to performance improvement, little evidence is available to support this hypothesis. The few studies conducted so far are descriptive rather than empirical in nature and tend to focus on the critical success factors (CSFs) for TQM implementation. Therefore, it is difficult to generalize about the extent to which the implementation of TQM along with related business strategies actually impact organizational performance. Further, there is a lack of literature establishing the link between TQM and marketing, though both the management approaches are considered complementary and assumed to have performance impact on organizations. To bridge these research gaps, this study looks into the assumed relationship between TQM and marketing, and their impact on organizational performance. Importantly, most TQM studies conducted thus far have dealt with organizations in the western world, and not many of them have addressed the local situation in Hong Kong. This study therefore may provide a useful reference about the combined effects of TQM and marketing on organizational performance in Hong Kong.

Total quality orientation looks at the level of quality management being implemented, while market orientation examines the level of marketing being practiced. In this study, TQM is considered to be relatively at a higher level total quality orientation than one that is practicing inspection alone. Marketing practiced in corporate environment, i.e. integrated marketing, is considered to be at a higher level of market orientation than when it is practiced as an independent organizational function. Theory suggests that organizations must align their TQM and marketing implementation to improve performance. To investigate the impact of these two 'different' management approaches which when implemented together is expected to bring about a synergy increasing organizational performance, a combination of quantitative and qualitative research was conducted to obtain empirical results through mail survey and case studies.
A model and several hypotheses concerning the relationships among total quality orientation, market orientation and organizational performance were proposed. Total quality orientation, market orientation and organizational performance were modeled as second order constructs consisting of several interrelated latent first order constructs that were operationalized by their immediate indicator variables. The model was evaluated, using data collected from 304 organizations having an operational quality management system. The quantitative phase of this study used structural equation modeling technique, i.e. LISREL. Analyses were performed in two-steps, first testing the piecewise measurement models of the three constructs, and then testing the structural model to estimate the hypothesized relationships among the constructs.

The results of the model evaluation showed strong support for a positive correlation between total quality orientation and market orientation. The path analysis of the model showed that market orientation positively affects organizational performance, but the affect of total quality orientation on organizational performance is not significant. However, there was strong evidence of alignment between total quality orientation and market orientation (TQOR/MARKOR alignment) among the samples. Organizations with higher levels of TQOR/MARKOR alignment were found to perform better than those with lower levels of alignment.

It was also found that the levels of total quality orientation and market orientation differ among different industry types in Hong Kong. Public utility and service industries were found to display higher levels of both total quality orientation and market orientation, followed by manufacturing industry and construction industry. The highly TQOR/MARKOR aligned organizations were also found to perform better than the other organizations. When TQM and marketing are operating synergistically, the performance impact of TQM is perhaps driven through market-oriented behaviors in organizations, although the total quality orientation/organizational performance relationship was not supported in the path analysis. An outward focus rather than an inward focus is implied for effective TQM implementation.

The results of the qualitative phase of the study that involved in-depth studies of four organizations with different degree of TQOR/MARKOR alignment lent further
support to the findings described earlier. Consistently, there was strong evidence that organizations with a higher level of TQOR/MARKOR alignment perform better than those with a lower level of TQOR/MARKOR alignment. A high level of TQOR/MARKOR alignment was identified as a significant contributor to organizational performance. Based on results of the case studies, factors that distinguish high from low performers, including 1) top management involvement and commitment 2) organization of systems, and 3) continuous focus on process improvement, were identified.

This study contributes to the knowledge on TQM/marketing management interface by providing empirical evidence on the performance impact of TQM and marketing, and how and why they interact in organizations to increase organizational performance. The study also uncovered the factors that might hinder the achievement of high level of TQOR/MARKOR alignment in organizations. In terms of organizational performance, the study suggests that TQM and marketing and their synergy may be a competitive necessity. This study helps management to understand the roles that TQM and marketing should play in organizations and their impact on organizational performance. Academic and managerial implications are included and suggestions for further research are offered.
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Chapter 1 -- Contextual Background and Research Objectives

1.1 Introduction

The 1990s seems to be the most challenging decade for business organizations since the industrial revolution in the early part of this century. The rapidly changing market and economic environments, characterized by such phenomena as globalization and deregulation of markets, severe competition, increasing expectations of customers and rapid technology transfer, have become norms for most organizations. Such environments demand business organizations to pay more attention to the needs of customers as competition intensifies. They must continuously innovate every aspect of their business operations for continuous improvement of products and target service quality offered. Reducing costs, innovating products and processes, improving productivity, and early market entries are necessary conditions for success. For sustained competitiveness, they need a strategy that aligns an organization with the stakeholders, and a management system that facilitates continuous improvement of every facet of their operations as the outcome must be recognized as a critical management objective.

To achieve these ends, many organizations are changing their operations from a production-oriented approach to an integrated marketing approach. This approach requires customer satisfaction as the very heart of business operations. At the same time, many organizations resort to quality management and embrace the concept of total quality management (TQM) which links organizational visions, missions, operating principles and quality values with satisfaction of customer needs as the first priority. Various forms of quality management systems such as quality control, quality assurance and TQM are being pursued for quality improvement to achieve the goal of customer satisfaction.

In this study, the term total quality orientation is referring to the degree/level of quality management practice. Market orientation on the other hand is the degree/level of marketing practice. An organization practicing TQM for example is considered to
be relatively at a higher level of total quality orientation than one that is practicing inspection alone.

Similarly, market orientation is the degree/level of marketing practice. An organization implementing marketing as a company-wide concept, i.e. integrated marketing, is at a higher level of market orientation than one that is practicing marketing as an independent organization function.

Total quality management is defined as a management approach of an organization centered on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits to all members of the organization and to society (ISO:8402 1994).

Marketing is defined as a management approach that holds that long-term profitability is best achieved by focusing the coordinated activities of the organization towards satisfying the needs of a particular market segment (see Kotler 1994).

Organizational performance refers to the ability of an organization to satisfy a multiple of stakeholders including customers, employees, shareholders, and the society in an effective and efficient manner. Organizational performance or competitiveness results from the difference between the value a firm is able to create for its various stakeholders and the cost of creating that value. High level of competitiveness is resulted from operating with lower costs than competitors for equivalent benefits, or by providing unique benefits more than incurring higher costs.

1.2 Contextual Background of the Study

The economy of Hong Kong has transformed from a fishing village and an entrepot trade to a leading exporter of light manufacturing, and then to a major world commercial and service center. The process of industrialization took place in Hong Kong during the period of 1950 to 1960. Manufacturing activities began to grow in this era and continued to flourish in the 1970s. The manufacturing activities in fact sustained the prosperity of the territory. At that stage of development, Hong Kong functioned as a base of manufacturing, and many businesses served as original
equipment manufacturers (OEM) for other more developed nations, for example, Japan and the United States. Product development and quality seemed to be a less important issue as Hong Kong was simply manufacturing quantities to specification determined by third parties.

Starting from the early 1980s, changes began to take place. After the open door policy of China was declared, China has emerged as a significant player with its abundant supply of low cost labor for labor-intensive manufacturing activities. An increasing number of local manufacturing activities moved inland to benefit from reducing labor cost. Meanwhile, the territory also faced high value-added competitors from Korea and Taiwan who experienced remarkable growth in manufacturing export in 1980s. Challenges were also present from low cost labor-intensive competitors such as Thailand and Malaysia. Hong Kong’s prior strength of having a hardworking, low-wage work force has been gradually eroded. The changes in the economic climate since the 1980s forced the Hong Kong businesses to focus more on the needs of the market as their past advantages decreased and the competition intensified. The Hong Kong businesses therefore need a strategy to build a new competitive advantage if they are to respond to the challenges.

To excel in the global business arena, market-driven quality, the quality that is integrated with the voices of customers, rather than manufacturing quality was needed (Hurley 1994; King 1995; Morgan and Piercy 1992; O’Neal and LaFief 1992; Perry, Wong and Bernhardt 1995). The Hong Kong businesses must run their businesses and focus their customers in a different manner than ever before. The required strategy is to supplant the production era by a mass marketing era (Ansoff 1979). A characteristic of such an era is an increasing orientation towards customers and their needs. Hong Kong companies must no longer limit themselves to offer a standard product at a low cost and focus on internal efficiency and productivity. Rather, they must focus on strengthening the value-added features of their products and services. The challenge is to determine what the customers want and whether they are satisfied with the company, its products and its services (Miller 1992). This implies that customers should be integrally involved in the design, development, manufacturing and sales of products and services. The voices of the customers must be heard and the company culture must become market-driven.
Increasingly, Hong Kong businesses have begun to realize that competitiveness is the key to staying in today's rapidly changing marketplace. Many of them have embarked on formal programs such as TQM to improve quality in order to enhance their responsiveness in serving customers. These activities reflect their conscious attempts to improve quality and to develop and maintain a market orientation within the organizations.

1.2.1 Quality Management in Hong Kong

Being aware of the fierce competition from the low cost labor-intensive countries, the high value-added competitors, and the important role of quality in competitiveness, government and businesses in Hong Kong respond by stressing on quality. Many companies in Hong Kong have joined the quality movement and implemented various programs to improve quality including quality circles, quality control, and ISO 9000 series as the means to achieving such objectives. They regard quality, usually in the form of certified quality management systems such as the ISO 9000 series as a competitive edge, or as a basic qualification for survival. Some companies even look forward to improving themselves by using the certification process to link quality assurance and process improvement within a TQM framework. They refer their quality management systems variously as total quality control (TQC), company-wide quality management (CWQM) and total quality management (TQM).

There are various forms of activities, both governmental and non-governmental, to boost quality management in Hong Kong. To raise the level of quality awareness and to promote the concept of quality management and its effective implementation in Hong Kong, a non-profit-making professional association, The Hong Kong Quality Management Association (HKQMA) was established in 1983. To sustain the growth of product quality in Hong Kong, a scheme called Hong Kong Q-Mark was established in 1987 under a statutory provision to upgrade the standard of Hong Kong manufactured goods. An award of the Quality Mark is presented every year to the company whose products comply with recognized standards and specifications. The Q-Mark award is for product standards, different from the ISO 9000 series standard for system and operation standards. Likewise, to reward commitment to quality
improvement, the Hong Kong Management Association (HKMA) introduced the annual HKMA’s Quality Award in 1991.

To promote quality, the Government funded the establishment of the Hong Kong Quality Assurance Agency (HKQAA) in 1990, three years after the publication of the ISO 9000 series of standards. Being the only certification body supported by the Hong Kong Government, HKQAA issued its first ISO certification in April 1991. To assist and complement the government efforts in promoting quality, the Hong Kong Polytechnic University has set up a Quality and Reliability Center. Since the founding in 1991, the center has offered a lot of activities to promote the concepts of TQM and ISO 9000 quality management systems. To encourage the adoption of quality management system in Hong Kong, Industry Department of the Government often runs quality promotion programs including the application of ISO quality management systems and the TQM approach to company operations.

In 1993, Housing Authority of the Government boosted quality movement by stipulating building contractors to have certification in ISO series before they are eligible for public housing tender. Many other government departments and public organizations have taken this quality step as a commitment to high quality public services and social accountability. This decision not only motivated building contractors to pursue quality management, other business organizations related and unrelated to the construction industry are stimulated to implement quality management systems to meet the increasing public expectations. In addition to the governmental efforts, a voluntary organization “The Hong Kong Total Quality Forum” was established in 1994. The Forum actively promotes quality management activities and its effective implementation in Hong Kong.

1.2.2 Marketing Practice in Hong Kong

To deal with the challenge of the volatile business environment, business organizations in Hong Kong must develop effective business strategies to consider the needs of customers, the competition from the rivals and the global market, integrating them in a way that defines business reality. For improved competitiveness, companies in Hong Kong started to focus on their capabilities to meet customer expectations.
The business philosophy behind their pursued strategies to remain competitive is marketing, that is, to satisfy customer needs and wants better than their competition. Their dedication to improve competitiveness and to become market-driven can be reflected by the improvement of their investment in product development. For example, Giordano in fashion and clothing and Vtech in computer products are locally developed products that have achieved acceptance in global market. Brandnames of Hong Kong have become popular, especially in the areas of fashion and clothing, jewelry design, watches and clocks. Apart from the manufacturing field, service organizations are improving the service quality they offer in both the private and the public sectors. Some of the top hotels in Hong Kong rank among the world’s best. Hong Kong has also evolved to become one of the most important financial and service centers in the world. Service quality provided in Hong Kong today is considered as up to the world class.

All these demonstrate that business organizations in Hong Kong have shaped their own destiny by adding values to and placing emphasis on their offerings. Instead of being reactive to the market place as component parts assemblers, they have realized the importance of being proactive to customer needs and have moved towards higher value-added activities in the world market. They have started to develop their own offerings in response to the market needs.

1.2.3 TQM, Marketing and Competitiveness in Hong Kong

As competition in both the national and international markets intensifies, many business organizations in Hong Kong consider quality an important facet of their growth and success. Quality management systems are being sought after as the means to ensure quality and the means to enhance organizational performance. In fact, many companies in Hong Kong claim to have benefited from the implementation of TQM (HKGID 1995). The benefits include improved understanding of customer’s needs, improved customer satisfaction, improved internal communication, better problem-solving, greater employee commitment and motivation, stronger relationships with suppliers, better quality, higher prices, higher market shares, and increased profits. It seems that the adoption of TQM contributes to the continued competitiveness of many Hong Kong business organizations.
In the process of quality improvement, many of them are transforming themselves to become market-driven by keeping close to the customers and keeping ahead of the competition. Many organizations have introduced considerable research and development efforts on the creation and marketing of their own offerings as part of their strategic focus. The growing importance of quality improvement in these Hong Kong companies is observed in the areas of marketing, basic product design and development, customer service, central sourcing, as well as information technology management for faster response to customer needs and better control of diversified operations. They shape their destiny by putting more focus on customers in their business operations. Market-driven quality is embraced in preference to the manufacturing quality, reflecting the striving towards international quality standards and the goals of customer satisfaction in Hong Kong.

1.3 Problems and Objectives

1.3.1 Statement of Research Problems

The concept of TQM has been introduced into Hong Kong and many organizations have implemented this management approach. It has generated a tremendous amount of interest in many sectors of our economy -- manufacturing, service, health care and government. Industry-wide acceptance has resulted in extensive diffusion of quality concepts in Hong Kong. In the context of the extensive diffusion of TQM in Hong Kong, undertaking of TQM based research is needed for the benefits of Hong Kong economy. However, there seems to be little systematic study conducted to gather empirical evidence of its impact in Hong Kong. Further, there seems to be no attempt, which has been made to study the impact of TQM from a marketing point of view, though many organizations in Hong Kong have embraced the marketing concept.

There are books and literature concerning a conceptual framework (Tse 1994), implementation (Ngai and Cheng 1996, 1997; Tang and Tummala 1996), improvement tools (Lam 1996), and local experience (Cheng 1996; Go and Kivela 1996; Lee 1998) of quality management in Hong Kong. Empirical research has also been conducted to evaluate the extent of TQM ideas being understood (Izumi and
Whitfield 1997), and the impact of TQM on workers in Hong Kong (Lam 1995; Weerakoon and Lai 1997). However, there appears to be a lack of empirical research in Hong Kong to investigate the company-wide impact of TQM on organizational performance. This seems to be the case even in the western world. The extant TQM literature tends to be prescriptive in nature, describing various quality management practices (e.g. Bigwood 1997; Kim, Miller and Heineke 1997; Plenert 1996) or examining the approach of a single organization (e.g. Davis and Fisher 1994; Mani 1995; Mitki and Shani 1995). Though the prescriptive literature is very useful to learn about the implementation of various quality management practices, they fail to scientifically tie the use of such practices to performance or to demonstrate the impact of quality management empirically. There is a study on the profit impact of marketing strategy (PIMS) which provides support for the relationship between quality and firm’s performance (Buzzell and Gale 1987). However, there does not seem to be sufficient evidence to believe that such a relationship should exist between the broader construct of TQM and organizational performance. While the importance of quality in Hong Kong has been widely recognized, the lack of empirical outcome-based evidence has resulted in skepticism about the performance implications of a quality orientation.

On the other hand, there are a lot of research in marketing literature concerning customer focus and market orientation (Day 1994; Greenley 1995a; Kohli and Jaworski 1990; Narver and Slater 1990; Slater and Narver 1994b). There is also an explosion of research interest linking marketing with business performance. For example, customer satisfaction has been shown to contribute to business performance (Anderson, Fornell and Lehmann 1994; Deshpande, Farley and Webster 1993; Rust and Zahorik 1993). Link between market orientation and business performance has also been shown (Greenley 1995b; Slater and Narver 1995). However, there is a lack of research in the marketing discipline linking TQM with marketing in terms of their concepts, emphases and management interface.

The issue of product and service quality has received a good deal of attention in the marketing literature. A review of the marketing literature shows that marketing researchers and practitioners have dealt with product quality (Cravens, Holland, Lamb and Moncrief 1988), service quality (Moore and Schlegelmilch 1994; Parasuraman,
Zeithaml and Berry 1988), and customer satisfaction (Peterson and Wilson 1992). However, such work tended to focus on the customer side and examined relationships between quality and price, quality and advertising, and the customer service quality evaluation process, little have dealt with TQM. A review of related literature also reveals little about the extent to which marketing is using TQM. The literature relating to the role of marketing in quality improvement efforts is very limited. The existing few concern mainly with the use of marketing communications to publicize product and service quality improvements to gain non-price competitive advantage (e.g. Cravens et al 1988), the application of quality improvement concepts and methods to the marketing management function (e.g. Kohoutek 1988; Locander 1989), and the identification of market research and competitor intelligence roles for marketers as input to cross-interfunctional team approaches to quality improvement (e.g. Cravens et al 1988; O'Neal and LaFief 1992).

The lack of empirical research addressing the link between quality and marketing is also evident in the quality and the TQM literature. Though there are articles addressing the link between quality and marketing (Golomski 1986; Hurley 1994; Kern 1993; Locander 1989; Orsini 1994; Perry, Wong and Bemhardt 1995; Plsek 1987; Stowell 1989), they tended to concentrate on the implementation of TQM in the marketing process and were descriptive rather than empirical in nature. Empirical evidence for the link between TQM and marketing is still lacking.

Generally, there seems to be a lack of studies probing the link between TQM and organizational performance, and the link between TQM and marketing. Bearing this in mind, this study focuses on how TQM and marketing are linked to achieve market-driven quality and how they affect organizational performance. The intent of the study is to fill these research gaps by producing empirical evidence to clarify the relationship among TQM, marketing and organizational performance. The fundamental research questions are whether TQM and marketing are linked from a performance perspective and whether this link adds to the bottom-line of organizations.
1.3.2 Objectives of the Study

In answering to the increasing competition and customer expectations, many Hong Kong companies have adopted the principles of TQM to enhance their competitiveness. They put words like "quality" in their mission statements. They also embrace the concept of marketing and describe their strategies as market-driven or market-oriented. It seems that the approach and commitment to TQM and marketing are similar in their attempts for business excellence. This leads to the question of whether companies are referring to the same concept and management approach when they talk about their strategies to improve organizational performance. Interpretation of the eagerness of these organizations to pursue TQM and marketing for improved performance necessitates a more in-depth understanding of the two management approaches. What are the roles of TQM and marketing in organizational performance improvement? Are there any links between TQM and marketing in driving organizational performance? Is the total quality-oriented firm more likely to understand and manage customer expectations and more market-oriented? While there are studies linking the individual constructs of product/service quality and marketing to performance (e.g. Forker, Vickery and Droge 1996; Jaworski and Kohli 1993; Narver and Slater 1990; Peters and Waterman 1982; Rapert and Babakus 1996), less work appears to have been done on investigating the more complex relationships between the broader constructs of TQM and marketing.

Kordupleski, Rust, Zahorik (1993, p.94) said "there is no TQM until both customer needs and marketing impact are measured, and until both are linked to internal business processes". To achieve the full power of quality management, measurement is needed to provide feedback on its impacts for the never-ending cycle of continuous improvement - the major principle of TQM. To provide a reference about the possible impact of TQM, this study therefore attempts to evaluate the impact of quality management on organizational performance within Hong Kong industry, in particular the relationships of such management approach to marketing and ultimately to organizational performance. The key objectives of the study are to examine the relationships among TQM, marketing and organizational performance, to test the
research hypotheses constructed around the three research constructs, and to advance the knowledge in TQM/marketing management interface.

By empirically testing a theoretically grounded model of TQM, marketing and organizational performance, the study attempts to improve understanding of the issues that have theoretical and practical relevance. A combination of quantitative (survey research) and qualitative (case studies) research was conducted in order to accomplish the following objectives:

1) provide a reference for organizations about the possible impact of TQM on organizational performance within Hong Kong industry,
2) provide a reference for organizations about the possible impact of marketing on organizational performance within Hong Kong industry,
3) develop and test predictions of a conceptual framework integrating TQM, marketing and organizational performance,
4) specify and test hypotheses from the research model of TQM, marketing and organizational performance which is derived from their theoretical foundations,
5) explore the TQM/marketing management interface and the factors affecting the TQM/marketing relationships.

1.4 Organization of the Thesis

The thesis is organized into seven chapters. This chapter provided a general introduction and an overview of the study. Chapter two reviews the literature relevant to the key research constructs in the study: total quality orientation, market orientation, and organizational performance. The evolution, conceptual definition, and the major paradigms of TQM and marketing are outlined. The performance implications of TQM and marketing are examined. The discussions in Chapter two provide the backdrop upon which the conceptual framework of the study is structured.

Chapter three explains the relationships among the key constructs being studied, develops and describes the conceptual framework and identifies the hypothesized relationships among the key constructs in the study. In that chapter, aspects of TQM/marketing management interface in organization are discussed. The
relationships of TQM and marketing on organizational performance are articulated. The development of conceptual model linking total quality orientation, market orientation and organizational performance and the specific hypotheses concerning the relationships among the three constructs are presented in that chapter. Finally, the envisaged organizational position with different degree of quality management and marketing implementation is discussed and the potential forces that might affect the hypothesized TQM/marketing relationships are highlighted.

Chapter four describes the methodology used in the study. It details the research design, measurement of the research constructs, sampling characteristics, data collection procedures, methods of data analysis, and the results of the survey questionnaire pretest.

Chapter five presents the results of the quantitative research. The evaluation of the measurement and the structural models and the analysis of the test results for the hypothesized relationships are discussed in that chapter.

Chapter six provides case summaries of the selected companies showing different degree of total quality orientation and market orientation alignment (TQOR/MARKOR alignment). The case evidence was used to advance knowledge in TQM/marketing management interface. The limitations, contributions and implications of the study for theory and practice, conclusions of the study, and suggestion for further research are presented in Chapter seven of the thesis.
Chapter 2 -- Conceptual Background and Literature Review

2.1 Introduction

The relevant literature for the study includes TQM literature (section 2.2), marketing literature (section 2.3), and the literature on organizational performance (section 2.4). While there is an abundance of TQM literature in manufacturing and operations management, literature on the marketing aspect of TQM is sparse. Similarly, literature on the use of TQM in marketing is also limited, though there is a lot of marketing literature on product and service quality. The literature review in the study contains the TQM literature that is relevant to marketing, the marketing literature that discusses about the marketing's role in quality management, and the literature related to the performance implications of TQM and marketing.

Sections 2.2 and 2.3 discuss the conception, evolution, definition of TQM and marketing respectively and their respective theoretical implications on organizational performance. Section 2.4 examines the meaning of the only dependent construct in the study: organizational performance. Section 2.5 provides a brief summary of this chapter that facilitates the development of the conceptual framework and hypotheses in the study.

2.2 Total Quality Management (TQM)

2.2.1 Conceptualization of Quality

The term "quality" is a relative concept and means different things to different people. This leads to many different definitions of quality with none universally accepted, though the definition of quality has attracted considerable attention in the literature. One important point to note about the meaning and definition of quality is the multi-dimensional nature of the concept. The definition of quality depends largely on the orientation of the individual involved. As Reeves and Bednar (1994) pointed out no one definition of quality is best in every situation with respect to measurement, generalizability, and usefulness to management and relevance to customers. The multi-dimensional nature of the term is also evident in the work of Garvin (1984.
in which he proposed five bases of, and eight dimensions on quality respectively. The five bases of quality are: transcendental, product, user, manufacturing and value. The eight dimensions of quality include performance, features, reliability, conformance, durability, serviceability, aesthetics and perceived quality. In addition to the manufacturing based dimensions of quality proposed by Garvin (1984, 1987), Parasuraman, Zeithaml and Berry (1988) identified a further set of dimensions of quality for service industries. The five most critical service-based dimensions of quality are: tangibility, reliability, responsiveness, assurance and empathy.

Quality has been defined variously as: something with the positive attribute of conformance to specified standards (Shewhart 1931); conformance to requirements (Crosby 1979); the development, design, production and service of a product that is most economical, most useful, and always satisfactory to the customers (Ishikawa 1985); the degree of relative attainment of specification (Sinha and Willborn 1985); the degree of conformance of all relevant features and characteristics of the product to all of the aspects of customer's needs, limited by price and delivery he or she will accept (Groocock 1986); a predictable degree of uniformity and dependability at a low cost with a quality suited to the market (Deming 1986); anything which can be improved (Imai 1986); the loss a product causes to society after being shipped (Taguchi 1986); whatever the customer says it is, and the quality of a particular product or service is whatever the customer perceive it to be (Buzzell and Gale 1987); product performance which results in customer satisfaction (Juran 1988); the extent to which the customers or users believe the product or service surpasses their needs and expectations (Giltlow, Giltlow, Oppenheim and Oppenheim 1989); keep the service promise (Grönroos 1990); total composite product and service characteristics of marketing, engineering, manufacture and maintenance through which the product in use will meet the expectation of the customers (Feigenbaum 1991); a product or service free of deficiencies (Bemowski 1992) and satisfying or delighting the customers (Spencer 1994).

In all of the above, the primary emphasis of quality is on the satisfaction of customers' needs and wants. Recently, quality has acquired a broader meaning to embrace the satisfaction of both the internal and external customers (Dean and Bowen
1994). Indeed, a consensus of the conception of quality is important to drive business performance (Hardie 1998). To direct employees' efforts towards the goal of customer satisfaction, a common understanding of the term "quality" is required. For example, organizational members must adopt one of the five bases of quality suggested by Garvin (1984) and have an agreed definition of quality. Divergent interpretations of quality might obscure organizational directions and compromise efforts to improve quality. Viewed from this perspective, quality has become a critical strategic issue than an operational one in an increasingly competitive marketplace.

2.2.2 Evolution of TQM

The concept of quality has evolved gradually. The core concepts of the quality movement can be traced back directly to the roots of the principles of scientific management, and the evolution to the present day form can be tracked along the work of Shewhart (1931), Crosby (1979), Ishikawa (1985), Deming (1986), Imai (1986), Juran (1988) and any numbers of others in between that provided a steady stream of contributions to the field of quality management. Some authors (e.g. Garvin 1988; Lakhe and Mohanty 1994) described the stage of the TQM evolution as: 1) inspection, 2) statistical quality control, 3) quality assurance, and 4) total quality management.

In the nineteenth century, skill craftsmen controlled all aspects of manufacturing. Product quality could be ensured with ease as one or a few craftsmen controlled all the production processes. However, starting from the era of mass production characterized by division of labor, specialization of skills and standardization, the classical approach of management known as scientific management method initiated by Frederick Taylor became popular. Ansoff (1979, p.22) noted that for the "production era" (circa 1900-1940) that "the focus of industrial activity was on elaborating and perfecting the mechanism of mass production that progressively decreased the unit cost of products". Production processes were separated into different parts handled by workers with different specialized skills. The concept of quality during this period was effectively limited to offering a standard product at the lowest cost and that the orientation of most firms was on increasing internal efficiency and productivity. Those ideas can be clearly reflected in the work of management theorists of the time such as Frederick Taylor (1947), Henri Fayol (1949) and Lyndall
Urwick (1945). Quality inspection was adopted to separate out non-conforming parts. The term "quality" meant inspection and all finished products were examined for defects to ensure quality in the era of mass production.

The need for quality inspection was greatly expanded in the late mass production era because of the increase in production volumes and the variety of part components involved. Taylor's scientific management approach became inappropriate because of the huge cost involved in quality inspection. Organizations started to seek a better way of management for reduction of inspection cost. When the American Edward Deming introduced the concept of statistical quality process control to assist the Japanese industries and the reconstruction of the post-war Japan, the business world came to recognize the importance of quality control. Deming taught the Japanese ways to produce quality goods by teaching statistical techniques and the rationales, and offering them fourteen points as the quality improvement path. Because of good quality control, the Japanese products became competitive and were proved to be superior not only in cost and price but also with regard to quality. The success of the management practice in Japan demonstrated to the business world an effective strategy i.e. quality control to produce superior quality at a lower cost. Deming's ideas and the Japanese approach of management have since grown to dominate the management thinking. His ideas, in conjunction with the ideas of others, including Crosby (1979), Ishikawa (1985), Juran (1988) and Feigenbaum (1991) later formed the basis of TQM that is being promoted vigorously nowadays in the business world.

The concept of quality control further evolved to include every facet of business operations from product design and development to product delivery. By the 1960s, researchers (e.g. Feigenbaum 1991; Ishikawa 1985) were expanding the notions of quality control to consider its management implications. The responsibility and scope of quality control were broadened to organization-wide context with a strategic focus on customers. The idea of customer focus in quality control denoted the demise of the mass production era that was followed by the "mass-marketing era", which was characterized by an increasing orientation towards the needs and wants of customers (Ansoff 1979). This broadening perspective expanded quality control far beyond statistics to include ideas of quality systems, quality costs and quality assurance. This
broadened approach known as total quality control is demonstrated in the work of Feigenbaum (1991) which embodies TQM.

The idea of total quality control extended quality management methods to all functions at all management levels with an anchor on customer needs satisfaction. The total involvement aspect of the approach further shaped the foundation of TQM. In essence, what TQM emphasizes is the organizational ability to satisfy customer needs precisely and profitably involving all members of an organization. The need to excel in the competitive marketplace that requires organizational flexibility and responsiveness to satisfy customer needs gives rise to one of the most popular management approach of today - TQM. The foregoing discussions illustrate the trend in quality management that has been evolving from the inspection mode to that of prevention and organization-wide control. Table 2.1 compares the two management approaches and helps to have a better understanding of the evolution of TQM and how it differs from the traditional management method.

<table>
<thead>
<tr>
<th>Traditional Management</th>
<th>Total Quality Management</th>
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</thead>
<tbody>
<tr>
<td>Needs of customers defined by management perception</td>
<td>Needs defined by customers</td>
</tr>
<tr>
<td>Motivated by profit</td>
<td>Motivated by customer satisfaction</td>
</tr>
<tr>
<td>Inspection quality</td>
<td>Multidimensional attributes of quality</td>
</tr>
<tr>
<td>Inspects for errors after product is produced</td>
<td>Prevents errors and emphasizes quality of design</td>
</tr>
<tr>
<td>Independence of functions and jobs</td>
<td>Interdependency of functions and jobs</td>
</tr>
<tr>
<td>Hierarchy of organizational control</td>
<td>Flat organizational structure, employees are empowered to find better way to work</td>
</tr>
<tr>
<td>Division of labor</td>
<td>Multi-skill workforce</td>
</tr>
<tr>
<td>Short-term focus and result oriented</td>
<td>Long-term focus and continuous process improvement oriented</td>
</tr>
</tbody>
</table>

Table 2.1 Comparison between Traditional Management and Total Quality Management

Table 2.1 shows that TQM differs from traditional management in the following ways. It

1) focuses on customers absolutely as customer focus brings competitive edge to the organization,
2) takes the view that profits follow quality, not the other way around.
3) views total quality as having multi-dimensional attributes, as opposed to the
   unidimensional inspection quality,
4) emphasizes errors prevention, in contrast to errors inspection.
5) requires total participation to reach for the goal of customer satisfaction, everyone
   is motivated to contribute towards quality.
6) favors flat organizational structure, with authority pushed down almost to the
   lowest level, as against hierarchical control and many layers of authority in
   traditional management,
7) requires a multi-skilled workforce with job rotation, in contrast to division of
   labor,
8) is process-oriented with emphasis on continuous improvement of work processes.
   as opposed to the result-oriented nature of traditional management.

In the traditional management approach, quality was considered as the responsibility
of quality control or quality assurance department with the major objective of meeting
specifications by inspection of defects. In face of the escalating customer expectations
and severe competition, many organizations have embraced quality as an integral part
of their strategic business plans. The role of quality has changed from inspecting
defects and verifying products with regard to specifications to meeting or exceeding
customer needs and expectations. This change has led to TQM that requires radical
departures from the traditional one which takes quality as the responsibility of an
independent function. TQM treats quality as an integral part of management functions
at all levels. The pivotal difference between TQM and the traditional management
approach is in its focus on processes as opposed to the functional focus with the major
objective of customer satisfaction through management involvement at all levels.

**2.2.3 Other Definitions of TQM**

Total quality management, similar to the concept of quality, does not possess a
universal definition (Gehani 1993). Oakland (1993, p.14) defined it as an approach to
improving the effectiveness and flexibility of business as a whole. According to him,
TQM is essentially a way of organizing and improving the whole organization, every
department, every activity, and every single person at every level. The aim of which is
to continuously improve process performance by placing the customers at the focal point of operations in order to satisfy their requirements. TQM is a continuous quest for excellence that has to reach every individual within an organization in order to make prevention of defects possible and to satisfy customers totally at all times.

According to Pfau (1989), TQM is an approach for continuously improving the quality of goods and services delivered through the participation at all levels and functions of the organization. Tobin (1990) viewed TQM as a totally integrated effort for gaining competitive advantage by continuously improving every facet of organizational culture. Similarly, Lakhe and Mohanty (1994, p.429) stated that “TQM helps an organization focus clearly on the needs of the target markets by channeling the efforts, both human and procedural, in all functions to achieve quality performance. It develops a good procedure of never-ending improvement and enables firms to understand fully the competitive potentials and to contribute to their competitive strategy development”.

Similarly, according to a study group of the 1992 Total Quality Forum, TQM is defined as:

“A people focused management system that aims at continual increase in customer satisfaction at continually lower real cost. TQM is a total system approach (not a separate area or program), and an integral part of high level strategy. It works horizontally across functions and departments, involving all employees, top to bottom, and extends backwards and forwards to include the supply chain and the customer chain” (Bounds, Yorks, Adams and Ranny 1994, p.4).

Another way to look at TQM is to analyze the three words: total, quality and management. According to Kanji (1990), quality means satisfying customers’ requirements continually. Total quality is to achieve quality at low cost. Total quality management aims to obtain total quality by involving everyone’s daily commitment.

The above definitions emphasize that TQM is much more than simply a program or a group of specific techniques, rather it is “a management approach” and a “culture”, which can be viewed as a shift in both thinking and organizational culture (Sashkin
and Kiser 1992). Mohr-Jackson (1993, p.428) referred TQM to as a “distinct organizational culture, a fundamental share set of beliefs and values that put the customers in the center of the firm’s activities and operations”. Ross (1995) regarded TQM as an integrated management philosophy and a set of practices that emphasizes, among other things, continuous improvement, meeting customer requirements, reducing rework, long-range thinking, increased employee involvement and teamwork, process redesign, competitive benchmarking, team-based problem-solving, constant measurement of results, and closer relationships with suppliers. TQM has evolved as an approach to quality that is now characterized in terms of an integrated, systematic, organization-wide strategy for improving product and service quality (Saylor 1996; Tenner and DeToro 1992). Its adherents claim that TQM is equally applicable to different types of organizations e.g. manufacturing, service, nonprofit and government (Huq and Stolen 1998) and that it generates improved products and services, reduced costs, more satisfied customers and employees, and improved bottom-line financial performance (Walton 1989). Some authors (e.g. Oakland 1993; Tenner and Detoro 1992) compared it to a journey without end.

Recently, Miller (1996, p.157), using points of agreement between the writings of the quality gurus, developed a definition of TQM to serve as a reference point for TQM research. He defined TQM as:

“An ongoing process whereby top management takes whatever steps necessary to enable everyone in the organization in the course of performing all duties to establish and achieve standards which meet or exceed the needs and expectations of their customers, both external and internal”.

In addition, the propensity of organization for effective implementation of TQM is described as quality orientation by Miles, Russel and Arnold (1995), and total quality orientation by Mohr-Jackson (1998). Miles et al (1995, p.12) defined quality orientation as “a construct that describes an organizational philosophical commitment to developing and maintaining a competitive advantage based upon a quality focus”. Alternatively, Mohr-Jackson (1998, p.19) defined total quality orientation as “the organization-wide commitment to continuous improvement for delivery of customer perceived quality and ultimately customer satisfaction”. Both the definitions of
quality orientation stress organizational commitment to continuous improvement for the interests of multiple stakeholders.

Based on the foregoing discussions of the evolution of TQM, the total quality orientation of a firm can be defined as a continuum with inspection as the lowest and TQM as the highest. The degree of total quality orientation of a firm is dependent on its level of quality management implementation.

2.2.4 Quality Management and Organizational Performance

A focus on quality should contribute to improved organizational competitiveness. Phillips, Chang and Buzzell (1983) reported a significant relationship between relative quality (as perceived by the business units) and return on investment (ROI). The empirical analysis of the Profit Impact of Marketing Strategy (PIMS) database has shown a positive relationship between perceived quality and organization's financial performance (Buzzell and Gale 1987). Similarly, Rust, Zahorik and Keiningham (1995) found that superior service quality contributes to generate greater revenue and yield greater profitability. All these give weight to the Phillips et al.'s (1983) conclusion that in the long run, the most important factor affecting business performance is the quality of "good" and "service" offered by the organizations, relative to their competitors. To achieve this end, quality management or what some organizations referred to as TQM is adopted by an increasing number of organizations.

According to TQM advocates, TQM does produce value, through a variety of benefits: improved understanding of customers' needs, improved customer satisfaction, improved internal communication, better problem-solving, greater employee commitment and motivation, stronger relationships with suppliers, fewer errors and reduced waste (Juran 1988; Schmidt and Finnigan 1992; Spechler 1991).

To evaluate whether quality management adds to the bottom-line of organization, some acid tests were conducted. The acid test for quality management is the degree to which achieved quality translated to increased profits. In one of those studies, Garvin (1988) found that a strong association exists between productivity (both labor and
capital) and quality as well as between profitability (e.g. ROI) and quality. The relationship between quality and profitability, however, was less well established because of the many other variables affecting the ROI measures.

In an extensive study of New Zealand manufacturing firms, Sluti, Maani and Putterill (1995) used structural equation modeling (SEM) to test the relationships between typical measures of quality (such as scrap, rework and customer complaints), process utilization and output, manufacturing performance, and overall business performance. They found strong links between quality improvements and process utilization. Links were also observed between quality factors and manufacturing performance. For overall business performance and return on sales (ROS) measures, the links were established. But links with return of assets (ROA) and market share were less significant. Similar results can also be found in a study conducted by Adam (1994), where he found a strong relationship between quality management practice and performance quality. Forker, Vickery and Droge (1996) demonstrated that quality dimensions, especially design quality/design innovation and product improvement, are strongly related to business performance in the furniture industry. The performance measures included financial and marketing measures covering ROA, ROI, ROS, and market share. Likewise, Chapman, Murray and Mello (1997) found that TQM initiative can be linked to financial performance expressed in labor productivity ratios. However, no such link was found in ROA or ROS when correlated to TQM. In a study of a sample of sixty firms, Lemak, Reed and Satish (1997) found that firms demonstrated a commitment to TQM for a period of at least five years are associated with superior stock-market performance and improved profit margins.

In addition to the financial performance measures, links between quality management and a broader measure of performance were found. Some studies (e.g. Hayes and Clark 1985; Schmenner and Cook 1985) have found strong relationships between productivity improvement and organizational success in such factors as customer satisfaction programs, product quality improvement, reduction in waste and strategic quality improvement. Studies were also carried out to quantify the impact of formal TQM practices on performance. Hendricks and Singhal (1997) used quality award as a proxy for effective implementation of TQM and they found that award winning
firms outperform the control firms or the non-TQM firms on operating income-based measures. Similar results can also be found in the study conducted by Ahire, Waller and Golhar (1996), where the results suggested that TQM firms tend to do better than the non-TQM firms. Furthermore, it was found that TQM tends to create the environment necessary for organizational learning that would create competitive advantage by adapting to changing environments, continually improving and being able to absorb new concepts and innovations (Sohal and Morrison 1995). Other available empirical evidences also support the link between quality and organizational performance (Caruana and Pitt 1997; Larson and Sinha 1995; Rust, Zahorik and Keiningham 1995) and the assertion that implementation of TQM improves the profitability and competitive position of a firm (Dean and Snell 1996; Flynn, Schroeder and Sakakibara 1995; Mann and Kehoe 1994; Mohraman 1995; Powell 1995; Zairi, Letza and Oakland 1994).

2.2.5 Criticisms of Total Quality Management

Although there are many success stories of TQM implementation (e.g. Numerof and Abrams 1994; Ramberg 1994) and many adherents (e.g. Crosby 1979; Juran 1988; Ross 1995) have openly praised it, a large number of failures have been reported (e.g. Eskildson 1995) and the contribution of TQM to organizational competitiveness has also been questioned. Some of the criticisms concern the significant cost incurred in terms of time, human and financial resources, long period for pay-back, severe impact on employees, the suitability for service organizations (Harari 1993; Naj 1993) and the implementation obstacles (Grant, Shani and Krishnan 1994; Reger, Gustafson, Demarie and Mullane 1994). Implementation of TQM has been considered as entailing excessive retraining costs, consuming inordinate amounts of management time, increasing paperwork and formality, demanding unrealistic employee commitment levels, emphasizing process over results, and failing to address the needs of small, service and nonprofit making firms (Fuchsberg 1992, 1993; Schaffer and Thomson 1992).

In general, criticisms of TQM can be classified into two categories: outright rejection of the TQM movement as a management fad and concerns about specific aspects of TQM. Some studies found that increased quality has no effect (Cottrell 1992; Yavas
and Burrows 1994) or even negative effect (Fisher 1992) on business performance. It was reported in The Economist (1992) that three fourth of the U.S. and British firms claiming to have implemented TQM programs showed no significant increase in performance or competitive gains as a result of TQM. Similarly, Mathews and Katel (1992) expected that both researchers and managers involved in TQM programs will lose their interests in the subject of TQM. Likewise, Papa (1993) suggested that TQM can revert to the old ways after eighteen months of practice. Myers and Ashkenas (1993) have discussed ways to stop TQM from becoming another expensive and unproductive fad. Even worse, one of the winners of the MBNQA, Wallace company, went bankrupt after receiving the award. Hill (1993) attributed the bankruptcy of the MBNQA winner to the unsustainable loss resulted from the high spending on quality. The collapse of the company may indicate the ineffectiveness of the management system.

The specific concerns of TQM criticisms include unrealistic expectation (Easton 1993; Tickel 1993) and misunderstanding of TQM where firms fail to grasp the extent of difference between traditional management and TQM (Chorn 1991; Grant, Shani and Krishnan 1994). Some even link TQM as nothing more than an entrepreneurial spirit in an organization in which everyone thinks like an owner in an attempt to satisfy customer needs and wants at a price customers are willing to pay (Merdinger 1993).

While TQM has been shown to result in improved organizational performance, the practice has also received criticisms concerning its values. For the question of whether TQM adds to the bottom-line of organization or whether it is just a management fad that adds burdens to the Hong Kong business, research questions concerning the link between TQM and organization performance and its link with marketing are developed and presented in Chapter three. The next section discusses the marketing evolution, conception and its performance implications that will facilitate the development of the links identified above.
2.3 Marketing

2.3.1 The Marketing Concept

The marketing concept suggests that the long-term purpose of the firm is to satisfy customer needs for the purpose of maximizing corporate profits (Kohli and Jaworski 1990; Webster 1988). It is not until recently that the marketing concept is widely discussed by the academics and adopted as a business practice. The business world, particularly the American businesses, astounded by the Japanese market success and urged by popular writers such as Peters and Waterman (1982) and marketing scholars such as Day (1990) and Day and Wensley (1988), woke up to the importance of the marketing concept. It is believed that companies that are better equipped to respond to market requirements and to anticipate changing conditions are expected to enjoy long-run competitive advantage and superior profitability (Day 1994).

There seems to be no universally accepted definition of marketing (Kohli and Jaworski 1990), even though the marketing concept has been widely discussed in the past decades. The concept has been referred to as being customer-driven, customer-oriented and customer focused. There are four traditional components of the marketing concept, they include 1) target market, 2) customer need, 3) coordinated marketing, and 4) profitability. The terms used to describe organizational efforts to put the concept into practice include the marketing philosophy (McNamara 1972), integrated marketing (Barksdale and Darden 1971), relationship marketing (Grönroos 1996; Gummesson 1987), marketing orientation (Payne 1988), and market orientation (Kohli and Jaworski 1990; Narver and Slater 1990).

Research has provided various definitions of the customer-oriented approach to do business. Felton (1959) defined marketing concept as a corporate state of mind that insists on the integration and coordination of all the marketing functions that, in turn, are merged with all other corporate functions, for the basic purpose of producing maximum long-range corporate profits. McNamara (1972) regarded the marketing concept as a business philosophy, an ideal or a policy statement. Houston (1986) defined the concept as a willingness to recognize and understand the customers' needs and wants, and a willingness to adjust any of the marketing mix elements, including
product, to satisfy those needs and wants. Grönross (1990) regarded marketing as a relationship cultivation process to establish, maintain and enhance long-term customer relationships at a profit, so that the objectives of the parties involved are met which is achieved by a mutual exchange and fulfillment of promises. Kotler and Armstrong (1996, p.16) wrote that the marketing concept, the key to achieving organizational goals, is practiced in determining the needs and wants of the target market and delivering satisfaction of such needs and wants through an integrated product-service offering more efficiently and effectively than competitors do.

2.3.2 Evolution of Marketing

The concept of marketing emerged as the economy developed and industrial sectors began to increase their efficiency of production. As a result, the supply side of the market began to exceed the demand side. In this situation, the marketer was able to sell whatever he produced – seller market. This leads to a production orientation. In a production orientation, the focus was on the strength of designing and producing large quantities. The situation consequently required firms to employ sales techniques to push excessive products into the hands of customers. One of the skills employed was the use of salesmen to generate sales. This type of marketing technique known as selling is still common. Increasingly, companies started to adopt the marketing concept and realized that their long-term survival depends on their ability to fulfill the customer needs.

The marketing concept centers on the management of market “exchange” between customers and organizations. It helps organizations to achieve exchange-determined goals more efficiently (Houston 1986). One of the earliest proponents for the marketing concept is Peter Drucker (1954, p.37), who argued that “creating a satisfied customer is the only valid definition of business purpose”. In contrast to the sales concept, which is short-term with a focus on the selling process, the marketing concept is strategically oriented towards long-term customer satisfaction rather than sales volume as the key to profitability (Webster 1988). For decades, the marketing concept has been the core of marketing ideology and marketing theory (Brownlie and Saren 1992).
Traditionally, marketing was viewed and practiced as an independent function, where the specialists of the marketing department were the only staff members responsible for marketing related activities including market research, packaging, promotion, pricing, and distribution decisions. Employees in other departments were rarely trained to think marketing nor given any marketing responsibilities. The core of this approach to marketing is the manipulation of the marketing mixes of the famous four Ps, namely product, price, promotion and place.

Since the 1960s, the marketing mixes approach has dominated the marketing literature and practice. It has achieved a paradigmatic position and has a profound influence on the marketing thought and on the implementation of the marketing paradigm. Even today, many organizations still take the marketing mixes framework as their only model of marketing. However, the marketing mixes approach has received many criticisms and warnings. It has been criticized as being loose in theoretical foundation (Kent 1986; Van Watershoot and Van den Bulte 1992) and lacking interactive elements with the customers (e.g. Anderson and Taylor 1995; Grönroos 1989) and between organizational areas (e.g. Grönroos 1989, 1990; Lawton 1991).

Alternatively, another approach to marketing based on the establishment and management of relationships has emerged with two streams of research emanating from Scandinavia and Northern Europe in the 1970s. The research streams are the Nordic school of service, which looks at management and marketing from a service perspective, and the IMP (Industrial Marketing and Purchasing) group, which takes a network and interaction approach to understanding industrial businesses. A common element of these two schools of thought is that marketing is more than managing a specialist function, and that marketing management should be built on relationship rather than transaction-based exchange. They consider the marketing mixes approach outdated and relevant only to a certain type of firms and markets that does not involve service elements in the process of exchange (Anderson, Hakansson and Johanson 1994; Gummesson 1987, 1994; Grönroos 1994, 1996).

The relational marketing perspective as suggested by the Nordic school of service and the IMP group includes the fundamental notion of marketing involving the relationships between a firm and its environment. Relational marketing prepares an
organization for, and implements activities needed to manage the interfaces with its environment. It suggests a paradigmatic shift of marketing from the transactional base approach to the relational base approach. Recent marketing literature has reflected this in the attention to the concept of "relationship marketing" (Grönroos 1994, 1996; Magrath and Hardy 1994; Vavra 1992). While relational marketing is currently receiving attention from academics and practitioners, it is argued that the role of transactional marketing should not be ignored or underestimated (Brodie, Coviello, Brookes and Little 1997). Table 2.2 compares the transactional and the relational approach to marketing.

<table>
<thead>
<tr>
<th>The Strategy Continuum</th>
<th>Transactional Marketing</th>
<th>Relational Marketing</th>
</tr>
</thead>
<tbody>
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<td>Time Perspective</td>
<td>Short-term focus</td>
<td>Long-term focus</td>
</tr>
<tr>
<td>Dominating marketing function</td>
<td>Marketing mix</td>
<td>Interactive marketing (support by marketing mix activities)</td>
</tr>
<tr>
<td>Price elasticity</td>
<td>Customers tend to be more sensitive to price</td>
<td>Customers tend to be less sensitive to price</td>
</tr>
<tr>
<td>Dominating quality dimension</td>
<td>Quality of output (technical quality dimension) is dominating</td>
<td>Quality of interaction (functional quality dimension) grows in importance and may become dominating</td>
</tr>
<tr>
<td>Measurement of customer satisfaction</td>
<td>Monitoring market share (indirect approach)</td>
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</tr>
<tr>
<td>Customer information system</td>
<td>Ad hoc customer satisfaction surveys</td>
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</tr>
<tr>
<td>Interdependency between marketing, operation and personnel</td>
<td>Interface of no or limited strategic importance</td>
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<td></td>
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</tr>
</tbody>
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Table 2.2 Comparison between Transactional and Relational Approach to Marketing

Source: Grönroos (1994)

Recently, the focus of marketing concept further extends to include environmental interests in face of environmental awareness and environmental turbulence, mainly in the form of rapid globalization and technological metamorphosis. There evolves concepts such as environmental marketing and green marketing that extend marketing
to a broader context to include multiple stakeholders. Webster (1992) has provided a significant insight into the new organizational forms that are appearing in response to dynamic, threatening, and complex changes in the external environment. He discussed a continuum in which organizations can move from a focus on transactions, to repeated transactions, then long-term relationships, buyer-seller partnerships, strategic alliances, network organizations, and finally, vertical integration. The work of Webster (1992) reflects the strategic importance of customer relationship to business and the need to search for greater flexibility, innovativeness and speed in organizational structure to meet the evolving customer needs in order to build and maintain customer relationships. These can be reflected by a strong interest of academics as well as practitioners in the marketing concept and its implementation i.e. market orientation (e.g. Deshpande and Webster 1989; Houston 1986; Kohli and Jaworski 1990; Webster 1988).

2.3.3 Other Definitions of Market Orientation

With the competitive pressure for being responsive to the needs of customers, the term market orientation gains importance and becomes the cornerstone of the marketing concept. The term market orientation that represents effective marketing implementation illustrates the significance of proactive attitude to doing business and developing a competitive edge. This is reflected by the increasing number of conceptual and empirical studies of market orientation in the marketing literature (Day 1994; Greenley 1995b; Jaworski and Kohli 1993; Kohli and Jaworski 1990; Lichtenthal and Wilson 1992; Narver and Slater 1990; Slater and Narver 1994a, 1995).

The term “market orientation” has been used to mean implementation of the marketing concept. McCarthy and Perreault (1990) defined market orientation as the organization’s willingness to adopt the marketing concept as its underlying business philosophy. They suggest that a market orientation implies the goal of satisfying customer needs while meeting organizational objectives. On the other hand, market orientation has been argued as a set of attitudes, which is based on creating and enhancing value to customers as a part of corporate culture (Deshpande and Webster 1989; Turner 1997). Grönroos (1989) has argued for the concept of market-oriented
management throughout a company that should provide marketing practitioners guidance on effective implementation of the marketing concept. In general, market orientation is composed of several principal features that include:

1) a set of beliefs that put the customer interest first (Deshpande, Farley and Webster 1993),

2) the ability of the organization to generate, disseminate and use superior information about customers and competitors (Kohli and Jaworski 1990),

3) the coordinated application of interfunctional resources to the creation of superior customer value (Narver and Slater 1990; Shapiro 1988).

Recently, Slater and Narver (1995) suggested that market orientation is the culture that 1) places the highest priority on the profitable creation and maintenance of superior customer value while considering the interests of other key stakeholders and 2) provides norms for behavior regarding the organizational development of and responsiveness to market information. The market intelligence and stakeholder focused interpretation is also reflected in the work of Lado, Maydeu-Olivares and Rivera (1998), where they define market orientation as the extent to which firms use information about their stakeholders to co-ordinate and implement strategic actions.

Based on the foregoing discussion of the evolution of marketing, the market orientation of a firm can be described as a continuum with production orientation as the lowest and integrated marketing as the highest. The degree of market orientation of a firm is dependent on its level of marketing implementation.

2.3.4 Marketing and Organizational Performance

Throughout the marketing literature, the adoption of the marketing concept has been regarded as a foundation for successful business performance. Peters and Waterman (1982) attributed the success of high-performing companies to a number of important factors such as staying close to the customers and a keen sense of the market. The large number of factors they suggested for improved performance can be grouped under the category of higher levels of "market orientation". The writers on "excellence" such as Peters and Waterman (1982), Kanter (1985), and Peters and
Austin (1985) have linked the importance of "being close to customers" to business performance. This linkage appears to have been taken for granted by both academicians (Houston 1986; Kotler 1994; McGee and Spiro 1988; Webster 1988) and practitioners (Kohli and Jaworski 1990).

In addition to defining the concept of market orientation, a number of authors, in recent years, have investigated the relationship between market orientation and the consequent business performance. For example, Jaworski and Kohli (1993) found that the market orientation of a business is an important determinant of its performance. They used five measures of performance in two samples of their study including market share, return of equity, organizational commitment, esprit de corps and overall performance to link market orientation and organizational performance. Except return of equity, all other performance measures were found positively related to market orientation. Similarly, Narver and Slater (1990) found a subtle relationship between market orientation and profitability. They identified a positive association between market orientation and return on assets, although only one measure of performance was used. In 1994, after reviewing the developing streams of empirical research, they concluded that there is "a strong relationship between market orientation and several measures of business performance, including profitability, customer retention, sales growth, and new product success" (Slater and Narver 1994a, p.52).

Furthermore, Ruckert (1992) studied the performance of two strategic business units (SBUs). He found a positive relationship between the degree of market orientation and the degree of long-run financial performance achieved by the business units, as well as a positive influence on several organizational processes and attitudes of managers such as job satisfaction and commitment to the organization. More importantly, the higher performing SBU was found to have a higher level of market orientation than the lower performing SBU. Similar results can also be found in the study of Deshpande, Farley and Webster (1993). In a longitudinal study of the impact of market orientation on small business performance, Pelham and Wilson (1996) found a strong and consistent influence of market orientation on various measures of small-firm performance including profitability, company growth and market share. However, the link between market orientation and performance was less conclusive in
some studies. Hart and Diamantopoulos (1993) found only limited evidence of the association, while Greenley (1995b) found no evidence that market orientation has a main effect on performance.

In addition to the financial link, studies were conducted to assess the impact of market orientation in other aspects. Atuahene-Gima (1995) found that market orientation has a strong positive effect on proficiency of predevelopment activity, proficiency of launch activity, service quality, product advantage, marketing synergy and teamwork. In another study that addressed the link between market orientation and innovation, he found further that market orientation has significant relationships with innovation characteristics such as innovation-marketing fit, product advantage and interfuctional teamwork, however the relationship was not established with product newness and innovation (Atuahene-Gima 1996). Furthermore, Morgan, Katsikeas and Appiah-Adu (1998) found that organizations characterized by high levels of market orientation perceived greater organizational learning capability with regard to the dimensions of strategic awareness, operational flexibility, strategic development process and managerial skills. Research attention has also been given to the market orientation and performance link in industrial market. Avlonitis and Gounaris (1997) showed empirically that the market orientation and performance link holds not only in the consumer market, but also in the case of industrial market. They concluded that building a market orientation is indeed a significant contributor to the company’s performance. Similar results can also be found in the study of Fritz (1996) where market orientation was empirically shown to be an important critical factor for corporate success.

2.3.5 Criticisms of Marketing

Despite the popularity of the marketing concept, it has received criticisms in several forms. For example, Kaldor (1971) argued that the marketing concept is an inadequate prescription of marketing strategy, as it virtually ignores a vital input of marketing strategy i.e. the creative abilities of the firm. He noted that customers do not always know what they need. Their ability to verbalize what they need is also limited by their knowledge, for example, in technology. Consequently, the progress of product innovation might be hindered.
Similarly, Bennett and Cooper (1979, 1981), Hayes and Abernathy (1980) have charged that the concept prevents major product innovation and leads firms towards low-risk product changes. They argued that a market-oriented focus can be detrimental to innovation and long-term success of a company because it seduces businesses into being narrowly interested in short-term, immediate customer needs. These criticisms concern the assumption inherent in the marketing concept that customers know what they want and are informed and highly rational in satisfying their wants. Similar reason was also claimed that there is a danger of staying too close to the customers that might prevent technological innovation (Bower and Christensen 1995).

Though the marketing concept has become a cornerstone of the marketing discipline, the concept has not been widely implemented (McGee and Spiro 1988) and the practitioners seeking to implement it have no specific guidance as to precisely what it is (Narver and Slater 1990). For example, Levitt (1960) attributed the unsatisfactory company performance in the marketplace to their failure in implementing the marketing concept. A number of authors have also noted the implementation issues and criticized the functional practice of marketing (Ames 1970; Baker 1994; King 1985). On the other hand, Barksdale and Darden (1971) pointed out that the core pillars underlying the marketing concept are of severely limited practical value. They concluded, as a result of their survey of Fortune 500 firms in 1970, that few firms are able to implement the concept. Brady and Davis (1993) questioned the contribution that marketing is "making" to organizations, specifically the large budgets associated with marketing department.

Nevertheless, the view that a market orientation is valuable is supported by some researchers. They considered that market orientation facilitates organizational learning on how to create superior customer value better and faster than competitors in dynamic and turbulent markets that may be the only source of sustainable competitive advantage (Dickson 1992; Slater and Narver 1995). It is also noted that the adoption of marketing as a way of operating businesses will remain crucial in the future (Barwise 1995).
While marketing has been shown to be a significant contributor to performance, it has received severe criticisms in various forms concerning its values to organization and the implementation issues involved. To examine whether marketing contributes to the performance of organization and to identify its link with the emerging management paradigm of TQM, Chapter three will develop a model that provides a conceptual link among TQM, marketing and organizational performance. The next section discusses the meaning of organizational performance that will facilitate development of the research model of the study in Chapter three.

2.4 Organizational Performance

2.4.1. The Meaning of Organizational Performance

The use of the term "performance" by researchers includes many dimensions such as efficiency, growth, profit and market share that measure different aspects of performance (Brush and Vanderwerf 1992). To understand the concept of organizational performance, it is necessary to understand its context. In the past, businesses have grown to rely on old concepts such as scientific management, organizational performance only meant to them standards and costs with profit, productivity and return on investment (ROI) were the most commonly used measures of organizational performance.

In the context of the highly competitive modern business environment, however, organizations strive for excellence, for higher and superior performance standards. Organizational performance extends to a wider context that means to them the extent to which they are on the track in achieving their goals and objectives and to detect, if any, gap between the target and the actual business outcome, and to measure how wide the gap is. It is essential for firms to understand the meaning of performance in order to make effective decisions so that their activities stay on course in achieving the required standards of competitiveness, especially in the context of TQM and marketing which emphasize satisfaction of interests of multiple stakeholders. The performance measures have to reflect progressive movement and incremental achievement of the targets required by different stakeholders. Measure of organizational performance has to look beyond cost criteria to quantify in non-
financial terms in areas such as delivery dependability, customer responsiveness, innovativeness, quality of working life, and impact on society.

To ensure achievement of organizational goals and objectives, performance needs to be measured for evaluation, control and improvement of business processes. Performance measures are also needed to compare the performance of different organizations, plants, departments, teams and individuals, and to assess employees. As Sink and Tuttle (1989) suggested, each activity that takes place in organizations has to be directed towards two distinctive goals: 1) getting the job done 2) constant improvement of performance. It is unlikely that any single performance measure such as the traditional financial measure can appropriately serve the needs of evaluating organizational performance in the modern business environment, particularly for management approaches such as TQM and marketing which consider the benefits of a multiple of stakeholders. Both the financial and non-financial aspects of performance should be used to improve performance measurement by examining multiple dimensions of performance (Chakravarthy 1986; Venkatraman and Ramanujam 1986).

The concept organizational performance and its measures will remain a major business issue for the 1990s and beyond, particularly as TQM and marketing will become much more embedded in organizational systems as the major driving forces. The measures of organizational performance have to reflect improvement in multiple dimensions and to serve the interests of multiple stakeholders.

2.5 Summary

During the past few decades, many organizations rushed to implement TQM to meet the challenges of increasing quality costs, increasing customer expectations and intensified competition. Some of these TQM programs were successful, but a large number of criticisms were also received. Indeed, the lack of a well-developed TQM theory and empirical evidence may hinder efforts to address whether TQM adds to organizational performance. Theoretical development of TQM and empirical evidence of its associated impact are needed to predict the outcome of its implementation. Furthermore, objective analysis of the strengths and weaknesses of TQM as a
management approach requires clearly stated theory to direct inquiry and research (Dean and Bowen 1994).

Similarly, the business world has woken up to the marketing concept and recognized the importance of market orientation. Business leaders have strongly advocated market-oriented management as a safeguard of long-term competitiveness. However, there is a considerable controversy regarding the value of marketing to organizations. Empirical evidence is needed to justify whether or not marketing enhances organizational capabilities or reduces organizational strengths.

This chapter has discussed the concepts, evolution, and performance implications of two popular management approaches of today: TQM and marketing. While the two management approaches are assumed to be contributors of performance improvement, they both have also received severe criticisms and controversies concerning their values to organizations. To address the questions of whether TQM and marketing can help the Hong Kong industry for improved performance and whether TQM and marketing are related management approaches that drive organizational performance, the next chapter develops a conceptual model linking the three research constructs: TQM, marketing and organizational performance. Specific hypotheses concerning the links among them, and the discussions on TQM/marketing management interface are also presented in the chapter follows.
Chapter 3 -- Development of Conceptual Framework and Hypotheses

3.1 Introduction

Chapter two explored the theoretical perspectives on TQM, marketing and organizational performance. This chapter extends the theoretical background of the three research constructs presented in Chapter two. The TQM/marketing management interface and their performance implications to each other are discussed in section 3.2. The conceptual model and the hypotheses concerning the relationships among the constructs are presented in section 3.3. Section 3.4 discusses the envisaged firm’s position in organizational performance with different levels of TQOR MARKOR alignment and probes into the potential forces that may affect the TQM, marketing and organizational performance relationships.

3.2 TQM and Marketing Management Interface

As quality means both producing products or services to specifications and meeting customers’ expectations, the needs of customers become the key input to TQM. The importance of serving customers by improving quality has been stressed by quality gurus such as Deming (1986) and Juran (1988). Their arguments are consistent with the early explanations of the marketing concept which included the identification of the relationship between profits and attention to customers’ needs (Brech 1953) and, subsequently, attention to the marketing mixes (Houston 1986; Kotler and Armstrong 1996), and relationship marketing (Christopher, Payne and Ballantyne 1991; Grönross 1996; Gummesson 1994). The similarity between TQM and marketing seems obvious as both the leading quality gurus and marketing experts are focusing on the same concept when they refer to “Delighting the customers” (Dibbo 1990).

Scrutinizing the concepts of TQM and marketing, it is not difficult to find that they share commonalities. Their common emphases are: customer focus, teamwork, continuous process improvement, leadership, empowerment, relationship management, environmental focus and performance focus. Comparing the characteristics of TQM and marketing, it is not difficult to discern the similarities of
their basic orientations (Morgan and Piercy 1992, 1996, 1998; O'Neal and LaFief 1992; Piercy and Morgan 1991; Witcher 1990). The link between TQM and marketing is obvious in their conceptual emphasis on meeting and satisfying the customer expectations. Quality is perceived by the customers that is inseparable from the usage context and the value of product or service. The marketing concern is to analyze, plan, implement and control programs conforming to the required quality for beneficial exchange with the customers. As TQM implies managing and controlling processes to satisfy customers on full range of product and service needs, marketing is related to TQM from the standpoint of business process improvement to arrive at customer satisfaction. The idea of TQM is in tune with the business thinking of being market-driven, staying close to customers, and market orientation.

Although the connection between TQM and marketing is clear from a conceptual sense, their relationship seems to be disconnected in actual practice and research. Today, many organizations still pursue quality improvement and market orientation as independent business objectives. The marketing people have been described as being unaware of the technical aspect of quality movement (Morgan and Piercy 1992; Orsini 1994). They view quality, other than product quality or service quality, as primarily a manufacturing or engineering responsibility (Cravens et al 1988; Morgan and Piercy 1992). Similarly, quality improvement efforts of many organizations are being accused of missing the marketing links (Kordupleski et al 1993). The two related management approaches tend to remain independent due to the lack of efforts, both in research and practice to link them together (Hurley 1994), in spite of the call for integration of marketing into TQM (Wiele, Dale, William, Bertsch and Timmer 1994).

In the following sub-sections, the relationship between TQM and marketing with regard to their commonalities are discussed. The performance implications of the two management approaches and their synergistic behavior for improved organizational performance are also discussed in the sections that follow.
3.2.1 Implications of TQM for Marketing

3.2.1.1 TQM as Internal Integrator

As discussed in Chapter two, marketing has received a wave of critical comments (Brady and Davis 1993; Hirschman 1983), particularly the tendency of the marketing concept being practiced as a set of functional activities rather than an organization-wide business philosophy (Ames 1970; Baker 1994; King 1985). Indeed, this type of narrow marketing practice has been regarded as irrelevant for business survival of today that demands quick actions to the ever changing market conditions (Brady and Davis 1993; Lynch 1994; Webster 1992). These developments have called for the reexamination of the marketing discipline (Brownlie, Saren, Whittington and Wensley 1994; Doyle 1995; Denison and McDonald 1995; Houston 1986; Hunt 1994) and the more effective implementation of the marketing concept on an organization-wide basis (Kohli and Jaworski 1990; Narver and Slater 1990).

As creation of customer value is the outcome of coordination and cooperation among functional areas (Craven et al 1988), effective management of organizational linkages and value chains enables firms to gain competitive advantage in the marketplace (Porter 1985). Delivery of customer satisfaction should not be confined to the privilege of marketing specialists, rather every member of an organization has a role to play for the creation of customer value (Grönroos 1989; Gupta, Raj and Wilemon 1986; Hutt and Speh 1988; Ruekert and Walker 1987; Webster 1988). Non-marketing specialists in other areas of an organization also contribute to customer satisfaction. They include people, for example, from engineering, R&D, manufacturing and product delivery that have been termed part-time marketers (PTMs), though they do not belong to the team of full-time marketers (FTMs) or the marketing department (Gummesson 1991). The PTMs can also be found outside the organization including the dealers, consultants, market research institutes and advertising agencies.

However, the marketing function in many organizations today still has not responded to this requirement for customer satisfaction. Baker (1994) and King (1985) have observed that marketing has generally made the mistake of seeing the subject as a functional discipline rather than an interactive and cross-functional team. Many
organizations still confine their customer-related activities to a specialist function and have not implemented boundary-spanning decision process (Ames and Hlavacek 1997; Lim and Reid 1992). Magrath (1992) has observed that the practice of marketing in many organizations has been described as being stuck in a "program culture", rather than embracing a "process culture" that emphasizes functional coordination.

If marketing is practiced as a specialist function rather than an organization-wide responsibility, how can the voices of customers be translated into internal improvement process and filtered throughout the organization for the benefits of customers? If this should happen, this may endanger the risk of losing, misinterpreting and distorting the voices of customers generated from the marketing function to other internal functions of an organization. The quality gap, the mismatch between the customer desired quality (or true quality) and the process quality (or internal quality), might arise if the voices of customers are lost in the quality improvement process.

It is obvious that marketing researchers have identified cross-functional cooperation and boundary-spanning decision processes as fertile ground for improving overall business performance and the important roles that other functional areas play in marketing (Hutt and Speh 1984; Lancaster 1993). Studies have addressed the integration of marketing with research and development (Moenaert, Souder, Meyer and Deschoolmeester 1994; Song, Neeley and Zhao 1996), manufacturing (Deane, McDougall and Gargya 1991), operations (Mahajan, Vakharia, Paul and Chase 1994), design (Mukhopadhyay and Gupta, 1998), production planning (Spekman and Hill 1980), engineering (Lancaster 1993), purchasing (Bregman 1995), and new product development (Workman 1993). Marketing professionals have advocated cross-functional and cross-disciplinary connection for marketing practice (e.g. Lynch 1994). Linkage and integration of marketing with other organizational areas have also been emphasized for improved competitiveness (Grönroos 1989; Gummesson 1991; Hutt 1996; Lim and Reid 1992; Ruekert and Walker 1987). Mathematical and conceptual models have been proposed to provide a more integrated decision process between diverse functional areas (Gupta, Raj and Wilemon 1986; Martin, Dent and Eckhart 1993). Furthermore, the significance of functional coordination and internal customers (Ahmed and Rafig 1995; Grönroos 1989; Gummesson 1991; Piercy 1995)
and relationship with partnering or outside organizations (Achrol 1997; Anderson, Hakansson and Johanson 1994; Cravens, Piercy and Shipp 1996) have been stressed. Rather than as a functional discipline, marketing is an integrated and interdisciplinary organizational approach to do business (Bernard 1987; Brown 1987; Doyle 1995; Hooley, Lynch and Shepherd 1990; Lynch 1994). The holistic nature of marketing is well demonstrated in the concept of market orientation that underpins the effective implementation of the marketing concept (Kohli and Jaworski 1990; Narver and Slater 1990).

Apparently it is no longer a lack of theoretical development with regard to the interfunctional dependent nature of marketing nor the case that the implementation issue is ignored by the marketing literature. A number of work has emerged specifically around these questions (e.g. Bonoma 1985; Ohmae 1983), and even mainstream textbooks have recognized the need for implementation skills (e.g. Kotler 1994) and "strategies of change" (O'Shaughnessy 1995). Indeed, the problem of narrow marketing practice does not lie in the philosophy of marketing itself, but in the failure of those organizations putting the concept into practice (Brownlie and Saren 1992) and the lack of implementation tools and techniques which aid them to achieve the power of marketing (Piercy and Morgan 1991). Coupled with TQM that challenges the value of functional structure in organizational design (Oakland 1993; Ross 1995), together with its set of management tools and techniques, the problem of narrow marketing practice stands a high chance to be overcome.

The holistic nature of the TQM approach is of potential use for implementing a market orientation (Day 1994; Gummesson 1991; Slater and Narver 1994) and breaking down functional barriers (Anderson, Rungtusanatham and Schroeder 1994; Hackman and Wageman 1995). TQM is based on the premise that all employees are process owners, all people contribute to fulfilling external customer requirements and everyone is part of a chain. The team-based TQM approach provides a company-wide vehicle for cooperation, coordination, collaboration and communication with other functional areas to achieve market orientation in organization. It contributes to the diffusion of the voices of customers and dissemination of market information filtered throughout an organization. The consequence of teamwork is the penetration of the marketing concept that permeates the whole organization. This team-oriented, or total
involved aspect of quality management is congruent with the idea of market orientation by Kohli and Jaworski (1990) about generation and dissemination of and responsiveness to market intelligence.

There are many tools in TQM which contribute to integrate the voices of customers into internal process for creation of customer satisfaction such as brainstorming, affinity diagram, criteria testing, customer contingency table and mind mapping, and for team-working environment including concurrent engineering, Taguchi design method, design for manufacturability, design for assembly. Perhaps, the most obvious and relevant TQM tool that facilitates cross functional coordination and helps marketing cascade throughout an organization is quality function deployment (QFD), an integrative tool to integrate customer requirements into the design process (Hauser and Clausing 1988; Hunter, Richard and Landingham 1994; Tottie and Lager 1995).

A technique used in QFD to integrate marketing with other organizational areas is the “house of quality”. QFD focuses both on needs determination and organization-wide commitment to needs satisfaction. It assists in the design of products or services in such a way that the voices of customers are explicitly considered, linked and deployed throughout the organizational structure for design decision (Tottie and Lager 1995). Its adoption is tantamount to the organization’s commitment to the marketing concept. The technique ensures the congruency between the voices of the customers and the voices of the processes for delivery of customer satisfaction.

The house of quality is a kind of relationship matrix that provides the means for interfunctional planning and communications that is shown in Figure 3.1.

Generally, the matrix collects information on customers needs (Whats) and the ways to meet their needs (Hows). The matrix assists in translating customer requirements into technical requirements or product attributes that can fulfill the customer needs. Considering the Whats and the Hows, a relationship matrix is constructed for the linkages between customer requirements and the ways to fulfill the requirements.
Figure 3.1 House of Quality

Further, information on the relative importance of customer requirements and the technical difficulties to fulfill the customer needs are also accessible by the matrix. The information facilitates the specification of target values for achieving the customer requirements. More importantly, the house of quality includes evaluation of the rival offerings in the market place based on customer perception. This part of the house helps a company to identify its own strengths and weaknesses in the market place. The competitive assessment provides information on product development for a proper market position.

The technique provides a means of translating customer requirements into critical product/service control characteristics, process control characteristics, and operating instructions. Once the initial house is constructed, it will be linked to the second house built in a like manner. The Hows in the first house (technical specification) will serve
as the Whats in the second house. Correspondingly, the Hows in the second house (component characteristics) will be developed to meet the Whats. The linked houses cascade through to, process operation, manufacturing, till final production. The continuous flows of the linked houses assure that all internal organizational measures and programmed elements are linked to customer requirements. The process of translating and transferring customer requirements through the linked houses is shown in Figure 3.2.

![Diagram showing linked houses for translating customer requirements through to production planning](image)

**Figure 3.2 Linked House Translating Customer Requirements through to Production Planning**

With QFD, marketing is integrated into quality and the voices of customers are translated into technical requirements that are to be disseminated throughout various organizational functions for the further stages of product/service or process development and implementation to arrive at the desired quality dimensions. In essence, QFD provides a vehicle for illustrating the relationship between marketing and TQM. It ensures that the voices of customers are heard and the employees understand how to translate their classical functional responsibilities into customer responsive actions and how to look at the market from their functional perspective. In addition, the QFD makes it clear for functional areas to understand the roles of other functions and how they can contribute, both input and output, to the marketing direction of the organization. It contributes to achieving the TQM and marketing objective of customer satisfaction by translating and diffusing the customer needs throughout an organization both horizontally and vertically.
From this perspective, TQM develops a customer-oriented paradigm and ensures that customer related activities are not left to separate management functions and the differing perceptions on customer needs are rationalized by reducing departmental isolation (Martin 1992) and interfunctional conflicts (Ruekert and Walker 1987) by communication (e.g. information sharing and debate) and joint responsibilities to one another. The boundary-spanning nature of TQM overcomes the traditional organizational thinking and links functional specialists through team, rather than functional structures by aligning firms around cross-functional processes rather than functional activities. The holistic approach of TQM which demands total involvement and participation of employees offers an organization-wide mechanism for focusing the organization’s efforts on the central issues of customer needs, requirements and expectations, a notion that is implicit in the marketing concept.

In addition to the holistic nature of the management approach, leadership and empowerment, which are the other two other pillars of TQM, offer insights for marketing. Leadership refers to the change driver in organization, usually at a high level of management, which involves setting goals, encouraging subordinates to work towards those goals and providing systems and resources to reach the goals. Empowerment is the act of delegating responsibility and authority to employees to make decisions and to take actions. They both lend synergy to marketing with the former involving top management commitment for market orientation, while the latter turning a company into a market-driven organization by motivating employees for customer-responsive actions.

TQM involves the top-down communication and deployment of objectives, and the bottom-up implementation of continuous improvement of activities (Oakland 1993). It stresses leadership to ensure practices of teamwork, continuous improvement and customer delight throughout organization. Top management leadership serves as role models, provides visible commitments and encourages participation and creativity from employees at all levels that are valuable for marketing to set clear goals and policies for customer satisfaction. Most importantly, organizational readiness for adopting market orientation requires top management commitment and involvement which has been regarded as one of the prerequisites for being market-oriented (Jaworski and Kohli 1993).
While the management sets directions and makes business decisions, the workforce should be empowered and given the responsibility for the bottom-up implementation of continuous improvement activities. Empowerment has two meanings for a market-oriented organization, one internal and one external. Internally, it means encouraging the customer-facing teams to feed market information back to the organization, particularly for the purpose of strategy development. Externally, it means allowing the customer-facing teams to make prompt decisions in the ways that they believe will truly delight the customers. The concept of empowerment is crucial to marketing because of the ever-changing customer needs and expectations in the marketplace that require quick actions to respond. With empowerment, employee attitude is likely to become active rather than passive to serve customers and to turn the company into a customer-responsive organization. The emphasis of TQM on leadership and empowerment should further serve the interest of market orientation.

3.2.1.2 TQM as External Integrator

Webster (1992) has pointed out that the role of marketing in managing relations among organizations, or among divisions with an organization, has changed from the transaction-based approach to the relation-based approach such as network organizations and vertical integration. The importance of relation-based marketing has been mounting and attracted much attention (e.g. Christopher et al 1991; Grönroos 1996; Gummesson 1994). The rationale behind is that rather than soliciting transaction from the customers, organizations need to nurture mutually supportive relations with them for competitive edge. A good customer relationship can also create barriers of entry by making the organization more in tune with its customer’s needs and thus more responsive. In the process of building a mutually beneficial relationship with customers, a firm needs not only organizational connectedness, but also partnerships with outside organizational members such as suppliers, distributors and advertising agencies, particularly for innovative processes which seem costly for organizations to conduct the whole core process and to acquire all the skills and expertise to come up with new products and processes.

The outside organizational partners play a significant role in delivering customer satisfaction. For example, suppliers contribute to the innovation of part components.
production schedule and production forecast. Advertising agencies diffuse the product or service information to the customers. The distributors feed back market information such as sales data and sales forecast for organizational decision making. As the outside organizational partners have an impact on marketing directly, or indirectly, a good relationship with them ensures a higher chance of successful delivery of customer satisfaction. In addition, sound relationship and network management allow for integration of facilitating organizations into decision making process for quality improvement throughout the systems from production to delivery that in turn increase overall organizational productivity, product and service differentiation and quick responsiveness to the marketplace.

Indeed, forward and backward relationship management have been emphasized by TQM. Instead of building transaction-based relationships, TQM stresses long-term mutually supportive forward relationship with customers and backward relationship with outside organizational partners particularly suppliers that are of impact on customer satisfaction. TQM helps to bring outside organizational partners into the decision process, for example, into cross-functional teams that increase innovation, speed the process and cut cost. One important point to note in TQM about relationship management with outside organizational partners is the emphasis on establishment of long-term (win-win) relationship. Deming (1986) has stressed the importance of building long-term relationship with suppliers. His principles prescribe ending the practice of awarding business on the basis of price alone, but instead moving towards a few selected suppliers of any one item by creating a long-term relationship of loyalty and trust. Schonberger (1990) also advocated the build-up of a “chain of customers” starting with the supplier and ending with the final buyer of a product or service. An examination of the process management category of the MBNQA criteria on supplier management reveals that this external aspect of TQM has received considerable attention.

In contrast to Porter’s (1980) view of competing, the focus of TQM is on the development of long-term partnership that maximizes the competitiveness of business partnership at the expense of the bargaining power of other rivals. The relationship emphasis of TQM complements the marketing concept, especially in the network approach, on cultivation of long-term relationship with customers and outside
organizational partners. The implications for marketing not only include low cost strategy, but also product/quality differentiations and market responsiveness.

3.2.1.3 TQM as Efficiency Enhancer

As creation of superior customer value requires an organization to analyze the market situation and to identify and understand the competitors' strength, weakness, capabilities and strategies both short- and long-term, satisfying customer wants and needs better than the competition becomes the key to success in the marketplace (Kotler 1994). Indeed, marketing as a management approach is dedicated to both the achievement of effectiveness, i.e. the ability to create and keep customers, and the achievement of efficiency, i.e. the achievement of maximum output for minimum input. Market-oriented management should strive to achieve the optimum balance between effectiveness and efficiency. A market-oriented organization should monitor its activities in terms of costs and revenues and avoid misallocation of resources. It should be effective relative to the competitors to meet the customer requirements.

The question is how can a firm achieve effectiveness and efficiency in the process of delivering customer satisfaction? Apparently marketing success is a matter of doing the right things (effectiveness) as well as doing the things right (efficiency). Marketing has a role to ensure that the organization is doing the right things and building the customer-desired quality. TQM complements marketing by enabling the organization to do the things right across the whole of the organization.

TQM complements marketing as the management approach has been based on the quest for progress and continual improvement in the areas of cost, reliability, quality, innovative efficiency and business effectiveness. It is concerned with constant examination of organizational processes for search of better methods. The continuous process improvement emphasis instigated by TQM means organizational commitment to look for areas of improvement in all business operations for the creation of customer value and the benefits of customers (Tenner and Detoro 1992). The concept of continuous process improvement is of great value to marketing, particularly when it is at the tactical level as a series of tasks and programs, for example, advertising campaigns, new product launches and distributor contest, which needs an
understanding of process variables such as cycle time, capacity, unit cost, yield, waste and flexibility. The activities involved are all organizational processes that are subject to regular cycle of planning, execution and evaluation, and they demonstrate the process-oriented aspect of marketing. Continuous process improvement focus of TQM contributes to marketing from the standpoint of efficiency.

TQM is associated with a collection of tools and methods that may facilitate continuous improvement of marketing activities. The most obvious tools of TQM for continuous improvement of marketing activities are benchmarking and statistical process control (SPC).

In addressing the competitive aspect of marketing, benchmarking is a powerful tool to aid marketing. It is a process that a company uses to compare its performance with the performance of its best competitors and with performance of companies known for their superior performance in certain functions. The goal of benchmarking is to identify best practice (Spendolini 1992). It leads to continuous improvement, increased knowledge about external changes, establishing targets for better performance, and prioritizing the areas that need to be focused for improvement. Benchmarking helps a firm to improve the performance of its products, services and business processes to achieve competitive advantages in the marketplace. The application of benchmarking to marketing has also been shown (e.g. Martin and Martin 1996).

On the other hand, the marketing performance of an organization requires analysis to obtain meaningful information for trends, projection and improvement actions. SPC can be used to analyze marketing activities for reduction of variability, measure of performance and identification of areas for improvement. It helps a firm to understand the causes of the problem and the opportunities that exist in improvement of marketing processes. Some of its tools that analyze variations in marketing activities include affinity diagram, relationship diagram, tree diagram, matrix chart, matrix data analysis chart, arrow diagram, and process decision program chart (PDPC). The tools that can be employed for problem-solving and variability reduction include pareto chart, flow chart, cause-and-effect-diagram, scatter diagram, control chart, check sheet and histogram. Indeed, SPC has been suggested for use to improve marketing
activities performance. The areas of application include customer satisfaction indices, time of delivery, sales data analysis and activity measures for sales people (e.g. Starkey 1995). The applications of TQM in advertising (e.g. Hurley, Gropper and Roma 1996) and sales management (e.g. Knouse and Strutton 1996) have also been discussed.

The quality tools just described focus on reducing sources of customer dissatisfaction and enhancing organizational performance through "continuous process improvement". The measurement focus of TQM through continuous improvement secures the harmony between external measure of customer expectation and internal measure of process improvement. It forces a widespread emphasis on analyzing marketing processes as well as non-marketing processes and measuring whether the marketing processes are effective and efficient in adding values for customers. The measurement emphasis leads to better understanding for marketing activities of how to improve performance, productivity and quality that will delight the customers. Marketing practice in a firm should benefit from continuous improvement in its responsiveness to both the product/service offerings and marketing processes that are needed to meet and anticipate dynamic customer needs.

3.2.1.4 Summary of TQM’s Implications for Marketing

The contributions of TQM to marketing involves the ways it brings organizational members across functional boundaries and outside organizational partners together in the business network for improvement of quality and productivity. TQM defines the firm around horizontal, cross-functional processes than vertical, functional tasks. It provides structures that break down functional barriers, flatten organizational levels, empower front-line staff, and focus efforts on the core-value adding processes for customer satisfaction. The emphases required by TQM on customer satisfaction reinforce these values and offer a roadmap for customer delight, providing the opportunity to ensure that a genuinely market-oriented management approach operates throughout the organization. It offers the structures and tools to operationalize customer focus by narrowing the "quality gap", and provides the performance improvement approaches which seem to be omitted from the marketing literature.
3.2.2 Implications of Marketing for TQM

Much has been said about the potential contributions of TQM and its management tools for effective marketing implementation. Marketing too has roles to enhance TQM efforts. Marketing contributes to determine the customer quality expectations and takes part in translating the customer expectations into quality strategies, and guiding other functional members to reach for the goal of customer satisfaction. It provides quality assurance and prevents inward focus of quality improvement efforts.

3.2.2.1 Marketing as Customer Window

Quality is not sufficient in itself to guarantee the success of a company. The quality concept is built onto zero-defect principle that essentially says “Do everything the way it is supposed to be done right the first time and every time” (Crosby 1979, p.169). It has been developed by non-marketing people who only recently have observed that customers are important to the success of the business. The concept of zero defect may lead some organizations to lose sight of customer needs, the changing customer preferences and market conditions as well as technological improvements. Though quality gurus such as Deming (1986), Juran (1988) and Feigenbaum (1991) have discussed the importance of customer wants, they gave little practical advice on how to assess wants so that appropriate product/service specifications could be established.

As customer orientation is a central aspect of TQM, customer definition of quality has its place in TQM implementation. However, quality improvement efforts in some organizations have not produced the desired result in customer satisfaction because of their internal and narrowly defined focus (Harari 1993). One major cause of this has been the absence of marketing link in TQM efforts. Marketing, especially marketing’s role as the ear to hear the voices of customers in organization, has too often been ignored in quality improvement, with the result that internal process improvement often has had no clear connection to customer needs (Kordupleski et al 1993). Internal quality focus might cause failure of a quality management program. The resulting situation may be that a firm makes a defect-free product/service but the product/service the customers do not want. With its origin from the field of
manufacturing, TQM may run the risk of concentrating on internal operational efficiency rather than on focusing the needs and wants of the customers.

It should be emphasized that quality is more than simply meeting specifications and that the customer’s point of view on quality is the key. The acceptability of a product or service in the marketplace, to a large extent, depends on the ability of the organization to define the customer side of quality involving the needs, expectations, satisfaction, buyer behaviors and the ability of the resulting offerings to fill the customer needs. The key to TQM success lies in discerning and exploiting the relationships between customer definition of quality and the ways to put it into real offerings.

Though customer is the focal point of a successful quality program, the transformation of customer-perceived dimensions of quality into quality measures for use may be a challenging task for many organizations. The role of marketing is crucial to the success of TQM efforts as the latter depends heavily on the whole organization’s ability to understand and respond to the customer requirements. Marketing has the responsibility to ensure that requirements for each product or service are accurately defined in terms of customer-perceived or true quality that is to be translated throughout the internal company structure to arrive at customer satisfaction. This marketing role as a customer window to determine and translate customer requirements into market-led quality is indispensable for total quality efforts. It helps to facilitate the customer satisfaction processes and guides a firm towards success by providing the quality definitions of the customers. Brooks and Wragg (1992) maintained that market-led quality, the quality that is based on market requirements, provides assurance that customer quality is built into the total product offering. The expertise of marketing in analysis of customer expectations establishes the basis for determining internal quality measures. Indeed, the importance of marketing’s role in quality efforts has been acknowledged by many researchers (e.g. Cravens et al. 1988; Morgan and Piercy 1992; O’Neal and LaFief 1992). The experience of the Japanese also highlights the importance of involving marketing in total quality control (Ishikawa 1993). These imply that the effectiveness of quality programs is likely to be enhanced with marketing involvement to understand customer expectations and requirements.
Perhaps the most obvious marketing tools to achieve the full power of TQM are marketing research and focus group interviews with the customers. Given that only the customers define the product/service specifications, the role of market research and customer interviews are clear in quality improvement, particularly in quality goal setting and quality strategy development. Indeed, the quality literature has recognized the importance of listening to customers. For example, Oakland (1993, p.16) said “TQM starts with marketing, and the links are formalized in quality function deployment (QFD)”. He further suggested that “marketing is responsible for determining the key characteristics that determine the suitability of the product or service in the eyes of the customers” (Oakland 1993, p.16). Similarly, Kordupleski et al (1993, p.93) have recognized the important role of marketing in TQM by stating that “without total satisfying customers by identifying customer needs, expressed in customer’s own words, linking customer satisfaction and customer perceived quality to internal managerial processes, and measuring the impact quality management on the market place, there can be no total quality management”. Orsini (1994) also contended that marketing has a role to play in the quality improvement process. He demonstrated it by showing the potential use of marketing expertise in fulfilling the criteria of quality management award (e.g. MBNQA), especially in the categories of customer focus and satisfaction and management of process quality.

The foregoing arguments reflect that the challenge for quality improvement is to incorporate the marketing side of quality that requires making customer needs and perceptions meaningful internally. The role marketing plays is critical in TQM as companies try to make sure that the quality they offer is the quality that their customers want and that their quality efforts are focused on improving customer satisfaction rather than on management perception of quality requirements or internal procedures.

3.2.2.2 Marketing as Quality Leader

Before a firm can implement a quality management program, it must ensure that all involved employees understand the meaning of quality. They need to know the customer’s definition of quality and to understand the needs of other functional areas
to meet the customer requirements. Coordinating all functions towards the final objective of customer satisfaction is essential to successful TQM implementation. Failure to arrive at customer satisfaction may result if organizational members do not have an agreed definition of quality.

However, different functional areas in organization define quality differently in their daily operations and have different roles in product design, development, materials acquisitions, production and product delivery to meet customer requirements. An agreed customer definition of quality alone is not sufficient to guide the internal design and operation functions to improve product or service quality for customer satisfaction. This requires intensive internal cross-functional interaction and a consensual understanding of the implications of the quality definition provided by the customers. In this case, marketing acts as a bridge among various functional areas, helping the staff members to understand the needs of customers, interpreting their roles in serving customer needs. It functions as a role model by identifying and defining the purpose of product or service to the internal customers and guiding them to reach for customer satisfaction. Piercy (1995) referred it to as “strategic internal market” that should have the goal of developing a marketing program aimed at the internal marketplace in the company that parallels and matches the marketing program aimed at the external marketplace of customers and competitors. Internal marketing dynamically links external to internal operating environments. This aspect of internal marketing suggests that quality strategy in a firm must be an explicit part of the strategic planning process and this view is supported by Kanji, Kristensen and Dahlggaard (1992).

Viewed from this perspective, marketing links requirements from the external environment with the relevant functional areas within the firm (Grönroos 1989; Gummesson 1991; Ruekert and Walker 1987). It helps to ensure that the information collected from the customers is used effectively as part of a quality improvement strategy, making customer perceptions and needs meaningful to organizational members. It also serves to communicate customer needs and requirements and the associated implications throughout the organization to ensure consistent decision-making and actions, and to motivate corrective actions and method improvements when other functional areas fail to fulfill the needs of customers (Mills 1986). The
role of marketing in quality improvement is like a quality leader guiding activities throughout the organization and even across the entire value chain of the network organizations to ensure the effectiveness in serving customers for maximization of long-term profitability.

In addition, marketing contributes to develop priorities of quality improvement and provides the road map for aligning and utilizing company resources. Marketing takes an active role in setting the TQM priorities based on customer requirements while defining the customers in a context that will include end users, company stakeholders and employees. This creates an environment where employees at all levels of the organization understand why priorities are connected with customer needs. It also keeps the organizational members and the rest of the network organizations informed about the customers.

In short, the role of marketing serves as a quality leader in quality improvement across organizational functions and the value chains with outside organizational partners to develop genuinely customer-focused strategies. It contributes to TQM as a leader to make every aspect of the business understand the customer definition of quality and ensures a focus on delivering superior value to customers in the competitive marketplace. McKenna (1991, p.79) described this holistic role of marketing by putting that “marketing is everything, everything is marketing”. Marketing complements TQM by providing quality assurance (understanding and delivering what the customers require) that every organizational member understand the customer definition of quality and carry that out “right the first time”. The effectiveness of TQM is likely to be enhanced with marketing leadership that enables the organization to manage customer expectations and perceptions of outcomes that constitute the core of quality management in organization.

3.2.2.3 Summary of Marketing's Implications for TQM

To deliver customer satisfaction, it is crucial that the business processes be solidly linked to eventual customer satisfaction and market responses. As TQM is originated from the field of manufacturing which emphasizes internal processes and operational efficiency, marketing involvement safeguards the relevance of internal improvement
to customers. It can bring to TQM extensive theoretical as well as empirical knowledge in the areas of identification and measurement of customer needs and customer satisfaction. By making TQM more closely associated with marketing, it should be possible to ensure that TQM is market-led rather than operations-led. Marketing ensures a customer focus in TQM and therefore avoids the quality improvement efforts falling into the pitfall of inward focus.

Marketing also contributes to guide other organizational functions towards the goal of customer satisfaction. It reinforces the customer focus of TQM and reduces internal resistance to continuous improvement by playing the leading role and involving the employees into the same organizational goal of customer satisfaction. In addition, it verifies achievement of customer desired quality and motivates method improvements throughout an organization and across value chains in the business networks for high level of quality.

3.2.3 Relationships between TQM and Marketing

TQM and marketing share the concepts of customer orientation, interfunctional coordination and continuous process improvement and they both aim at generating customer satisfaction as the key to satisfying organizational goals. The overlaps between the two management approaches have also been suggested by Mohr-Jackson (1993), where she conducted a qualitative study to phenomenologically assess the core pillars of TQM and compared them with those of market orientation. She suggested that TQM is broader than market orientation as it includes consideration of internal customers in addition to external customers (see also Mohr-Jackson 1991). Nevertheless, the marketing concept does address the internal aspect of organization for customer satisfaction, for example, internal marketing (e.g. Grönroos 1989; Gummesson 1991) and the foregoing discussion has linked this internal aspect of marketing to TQM. The compatibility of TQM and marketing seems evident and the synergistic nature of the two management approaches has also been addressed (Lai and Weerakoon 1998).

Total quality is viewed as customer-perceived quality incorporating the internal capability of managing quality and the consideration of customer needs and customer
satisfaction. The pursuit of customer-perceived quality in TQM is consistent with the goal of customer satisfaction in marketing. TQM considers external customers as well as internal customers with its process focus nature. It ensures continuous improvement of marketing activities to provide customer satisfaction by adhering to a set of general governing principles including customer focus, process improvement and measurement, teamwork and continuous improvement cycle. TQM lends vigor to marketing as it shares similar emphases to the marketing concept and prevents marketing from falling into isolated functional practice with its structure and tools.

While TQM is concerned with doing things right across the whole organization, marketing has a role to ensure that the organization is doing the right things and building customer-valued quality. Marketing, because of its outward and customer focus nature, takes a leadership role in TQM by providing the inputs and analyses that define the quality improvement priorities. The marketing concerns not only include the understanding of the needs of customers, but also the ability of organization to meet customers' demand. It can be reflected in the conception of market orientation that requires generation and dissemination market information regarding customer requirements throughout the organizational structures and between network organizations for responsiveness to customer satisfaction. Organization's responsiveness to customer requirements in turn drives internal improvement efforts. Marketing prevents firms from falling into the pitfall of inward focus in quality improvement efforts, assuring that customer-perceived quality is built into the products/services for customer satisfaction.

In summary, marketing can learn from TQM on how to increase efficiency. Similarly, TQM can benefit from the marketing concept to assure its effectiveness. While TQM gives marketing directions for implementation, marketing provides TQM with focus on customers. They both align a company to the needs of customers. With high level of total quality orientation and market orientation alignment (TQOR/MARKOR alignment), the management paradigm of organization is assumed to change. A contrast of the characteristics of the traditional marketing approach and the total quality marketing approach (with TQM variables involved) is presented in Table 3.1. The characteristics of total quality marketing are based on a logical consideration of high level of TQOR/MARKOR alignment in organization. The table identifies and
contrasts the underlying philosophical characteristics associated with the traditional approach and the total quality approach of marketing.

<table>
<thead>
<tr>
<th>TQM Variables involved</th>
<th>Traditional Marketing</th>
<th>Total Quality Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Satisfaction</td>
<td>Get new customers</td>
<td>Keep existing customers</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>Control the customers</td>
<td>Consult the customers</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>Organization-driven</td>
<td>Customer-driven</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>Only customers</td>
<td>Multiple Stakeholders</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>Transactional based</td>
<td>Relationship based</td>
</tr>
<tr>
<td>Total Involvement</td>
<td>Centralization</td>
<td>Decentralization</td>
</tr>
<tr>
<td>Total Involvement</td>
<td>Specialist</td>
<td>Multidisciplinary</td>
</tr>
<tr>
<td>Total Involvement</td>
<td>Individual-based</td>
<td>Team-based</td>
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<tr>
<td>Total Involvement</td>
<td>Unilateral Role</td>
<td>Consulting Role</td>
</tr>
<tr>
<td>Total Involvement</td>
<td>Hierarchical &amp; Mechanistic Structure</td>
<td>Flat &amp; Organic Structure</td>
</tr>
<tr>
<td>Total Involvement</td>
<td>Functional Practice</td>
<td>Integrated Functions</td>
</tr>
<tr>
<td>Total Involvement</td>
<td>Local Database</td>
<td>Shared Database</td>
</tr>
<tr>
<td>Process Improvement</td>
<td>Training</td>
<td>Learning</td>
</tr>
<tr>
<td>Process Improvement</td>
<td>Performance Measure</td>
<td>Satisfaction Measures</td>
</tr>
<tr>
<td>Process Improvement</td>
<td>Status quo</td>
<td>Continuous Improvement</td>
</tr>
<tr>
<td>Process Improvement</td>
<td>Manager</td>
<td>Leader</td>
</tr>
<tr>
<td>Process Improvement</td>
<td>Product Quality</td>
<td>Process Quality</td>
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<tr>
<td>Process Improvement</td>
<td>Cost Minimization</td>
<td>Value Maximization</td>
</tr>
<tr>
<td>Process Improvement</td>
<td>Technology Focus</td>
<td>People Focus</td>
</tr>
</tbody>
</table>

Table 3.1 Comparison of Traditional Marketing Practice and Total Quality Marketing Practice (TQMKTG)

The table demonstrates the differences between traditional marketing practice and the magnitude of change required for high level of TQOR/MARKOR alignment in organization. This demonstrates a fundamental shift in philosophy and orientation in an organization with high level of TQOR/MARKOR alignment. Failure to recognize the shift and make the corresponding changes might prevent TQM and marketing efforts from providing values to organizations.

To illustrate, total quality marketing focuses on the interactive nature of marketing. In contrast, traditional practice is a triangular structure with senior marketing managers at the top and line/staff managers at the bottom. Senior managers have the decision-making authority, and the line/staff managers implement the decisions. With the implementation of the "total quality" concept, the relationship based on the triangular structure is turned upside-down. The line/staff managers are empowered to a greater
extent and are given the authority to make day-to-day decisions. In short, high level of TQOR/MARKOR alignment enables a company to react quickly to satisfy its customers' immediate demands. It emphasizes organizational ability to maintain a competitive edge in the marketplace by staying close to customers.

3.2.4 TQM, Marketing and Organizational Performance Links

From the business strategy perspective, there is no difference between the performance expectation of a TQM paradigm and a marketing paradigm. The synergistic nature of TQM and marketing has potential for improving the success of a business. While profitability is described explicitly in the marketing concept, it is an implicit consequence of quality excellence and customer satisfaction in the context of TQM. Both TQM and marketing are linked from an organizational performance perspective, particularly in fulfillment of expectations and requirements of customers.

It has been described earlier that the adoption of TQM and the use of methodologies such as QFD might lead to the achievement of market orientation. But is it linked to the marketing strategies and the organizational performance resulting from the related strategies? The following paragraphs discuss the impact of quality on marketing strategies to address these issues.

Quality activities can influence organizational competitive advantages in the marketplace. Porter (1980) distinguished three types of strategies based on how a business attempts to gain and maintain its competitive advantages. The strategies are overall cost leadership strategy, differentiation strategy based on building customer perceptions of superior product quality, design and service, and lastly the focus strategy whereby an organization concentrates on a narrowly defined market niche with either cost leadership or differentiation approach. Quality improvement can lower costs and give customers the dual benefits of improved performance and lower prices. Such gains enhance the competitive advantages of an organization and offer benefits to stakeholders such as customers, investors and employees. Dean and Bowen (1994) provided similar argument about the relationship between TQM and competitive advantage by linking improved quality with competitive prices and increased market share. Alternatively, the differentiation strategy and the focus
strategy on customers provide products or services that are distinct from those offered by competitors. These two strategies required quality improvement continually to tailor the products and services to fit an increasingly fine definition of the customers.

Similarly, Robinson (1991) has drawn a model of three types of marketing strategic orientations that includes external forward marketing, internal marketing and external reverse marketing. External forward marketing is concerned with how an organization's marketing mixes strategies such as product, price, promotion and place can be used to create beneficial exchange relationships between an organization and the customers. The emphasis is on the improvement of the marketing relations between the company and its customers via adopting effective marketing mixes strategies. Similar to the quality activities, external forward marketing is missioned to determine the customer needs and to develop programs for meeting those needs better than the competitors can (Kotler 1994). The external forward marketing role is crucial in identifying the segments to serve and sustaining the competitive advantages that an organization has in the marketplace. These marketing activities lead an organization to base all its strength on identifying the needs and wants of customers in selected target markets and serving them better than the competition.

Internal marketing affects the formulation of organizational strategies in an operational sense. It is a concept that emphasizes management of relationships between FTMs and PTMs with focus on team management and total involvement. Internal marketing emphasizes the encouragement and motivation of employees in non-marketing functions to work as a team and support the marketing personnel to achieve the ultimate goal of customer satisfaction.

External reverse marketing is concerned with the backward integration with suppliers. It involves not only selecting suppliers who can deliver a quality product on schedule, but also imposes the total quality concept on them for the delivery of quality components. Figure 3.3 shows the relationships between TQM and the strategic marketing orientations.
It can be easily seen how the synergy of TQM and marketing comes about. The two management approaches have similar philosophical emphases from strategy perspective as shown in Figure 3.3. Both TQM and marketing complement each other for improved organizational performance.

3.3 Development of Conceptual Framework and Statement of Hypotheses

Both TQM and marketing are anchored to the concept of customer satisfaction which requires total involvement and continuous improvement for successful implementation. They define a distinct organizational culture that puts the customer in the center of a firm's activities and operations, and promises superior performance through an external focus on customer satisfaction and an internal focus on operational excellence. Both of them represent strategic responses to the market environments faced by firms and are assumed to lead to improved organizational performance. The level of total quality orientation is conceptually correlated with the level of market orientation within an organization and they both are complementary from organizational performance perspective. The relationships among total quality
orientation, market orientation and organizational performance are shown in Figure 3.4.

![Diagram showing relationships among Total Quality Orientation, Market Orientation and Organizational Performance](image)

**Figure 3.4 Relationships among Total Quality Orientation, Market Orientation and Organizational Performance**

Figure 3.4 consists of the three constructs total quality orientation, market orientation, and organizational performance. The arrows in the figure describe the relationships among the constructs. The bi-directional arrow between the two constructs illustrates the complementary nature of total quality orientation and market orientation. The two-ways arrow suggests positive correlation of quality management and marketing implementation in organization. The uni-directional arrows originated from the two constructs pointing to the construct of organizational performance suggests that both the constructs of total quality orientation and market orientation have a positive relationship with the organizational performance construct.

This model could be considered and tested for static or dynamic behavior. In this study, it is tested as a static one. The impact of higher levels of total quality orientation and market orientation are hypothesized to increase organizational performance. However, there may be the likelihood of high levels of organizational performance leading to increase in quality and marketing emphasis. Also companies having high levels of performance associated with certain levels of quality
management and marketing may in the long run see their losses in performance. These are perhaps areas for future research consideration.

As shown in Table 3.2, the latent constructs (total quality orientation, market orientation, organizational performance) are multidimensional. Total quality orientation has ten dimensions and these ten dimensions are measured by thirty-nine items relating total quality orientation to organizational performance. Similarly, market orientation is represented by three dimensions which in turn are measured using twenty items relating market orientation to organizational performance. Organizational performance is measured using four dimensions which in turn are measured using fifteen items. The latent constructs at the higher order level are attempting to represent a strategic level view, while the dimensions and items are the means to the strategy.

The discussion of the relationships among TQM, marketing and organizational performance thus far leads to the following hypotheses.

**Hypothesis 1**: The total quality orientation of a firm correlates positively with its market orientation.

**Hypothesis 2**: The total quality orientation of a firm affects positively its organizational performance.

**Hypothesis 3**: The market orientation of a firm affects positively its organizational performance.
### Research Constructs and Dimensions

<table>
<thead>
<tr>
<th>Construct Levels</th>
<th>Total Quality Orientation (i.e. Level of Quality Management Implementation)</th>
<th>Market Orientation (i.e. Level of Marketing Implementation)</th>
<th>Organizational Performance (i.e. Level of Organizational Performance)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Second Order/Higher</strong></td>
<td><strong>Second Order/Higher</strong></td>
<td><strong>Second Order/Higher</strong></td>
</tr>
<tr>
<td>1. People and Customer Management</td>
<td>First Order/Lower</td>
<td>1. Intelligence Generation</td>
<td>First Order/Lower</td>
</tr>
<tr>
<td>2. Supplier Partnerships</td>
<td>First Order/Lower</td>
<td>2. Intelligence Dissemination</td>
<td>First Order/Lower</td>
</tr>
<tr>
<td>3. Communication of Improvement Information</td>
<td>First Order/Lower</td>
<td>3. Intelligence Responsiveness</td>
<td>First Order/Lower</td>
</tr>
<tr>
<td>4. Customer Satisfaction Orientation</td>
<td>First Order/Lower</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. External Interface Management</td>
<td>First Order/Lower</td>
<td></td>
<td></td>
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<tr>
<td>6. Strategic Quality Management</td>
<td>First Order/Lower</td>
<td></td>
<td></td>
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<tr>
<td>7. Teamwork Structures for Improvement</td>
<td>First Order/Lower</td>
<td></td>
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<tr>
<td>8. Operational Quality Planning</td>
<td>First Order/Lower</td>
<td></td>
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<tr>
<td>9. Quality Improvement Measurement Systems</td>
<td>First Order/Lower</td>
<td></td>
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<tr>
<td>10. Corporate Quality Culture</td>
<td>First Order/Lower</td>
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</tbody>
</table>

Table 3.2 Research Constructs and Dimensions

### 3.4 Impact of TQOR/MARKOR Alignment on Organizational Performance

#### 3.4.1 Potential Forces Affecting TQOR/MARKOR Alignment and the Envisaged Organizational Position

Though total quality orientation is hypothesized to be related to improved performance in the previous section, there might be some organizational impediments affecting TQM’s contributions to organizational performance. One of the reported reasons for the ineffectiveness of TQM to enhance organizational performance is the possible lack of market focus in a TQM environment that has been discussed earlier. It is possible that organizations may introduce TQM in an environment that is totally lacking a market orientation and is driven by a production orientation. Equally, it is possible for organizations to be highly market-oriented, i.e. practicing integrated
marketing, but still pursuing a primitive stage in the evolution of quality. The possible scenarios of organizations practicing different levels of each dimension i.e. total quality orientation and market orientation are illustrated in Table 3.3.

<table>
<thead>
<tr>
<th>Level of Total Quality Orientation</th>
<th>TQM</th>
<th>Quality Assurance</th>
<th>Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Orientation</td>
<td>(A)</td>
<td>(D)</td>
<td>(G)</td>
</tr>
<tr>
<td>Functional Marketing</td>
<td>(B)</td>
<td>(E)</td>
<td>(H)</td>
</tr>
<tr>
<td>Integrated Marketing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.3 Envisaged Relationships between Total Quality Orientation and Market Orientation in Organizational Performance

The table may provide a framework for developing a clearer understanding of the relationships between total quality orientation and market orientation in organizational performance. It tries to categorize organizations based on the levels of quality management implementation (total quality orientation) practiced as one dimension and the levels of marketing implementation (market orientation) pursued as the other dimension. The table suggests that organizational positioning is contingent upon the levels of total quality orientation being practiced and the levels of market orientation being pursued, i.e. the level of TQOR/MARKOR alignment in organizations.

TQM, quality assurance and inspection represent the degree of total quality orientation in organization with TQM as the highest level and inspection as the lowest level. In the other dimension, production orientation, marketing as a function and integrated marketing represent low, medium and high level of market orientation in organization respectively. Production orientation is the lowest level of being market-oriented because the product/service offerings are produced for the sake of production not for the reason of satisfying customer needs. Marketing as a function is in the medium level of being market-oriented. Although customer satisfaction is still a primary goal for being market-oriented, it is not sufficient. High level of market
orientation requires awareness of competitors' offerings and capabilities and how those are viewed by customer needs and the understanding of organization's own capabilities relative to the competition to satisfy those market needs. Integrated marketing is needed to achieve a high level of market orientation.

It is proposed in the table that creation of sustainable competitive advantages requires partnership of the two management approaches. The expected competitive position with high level of TQOR/MARKOR alignment is shown in quadrant F in Table 3.3. A firm must therefore recognize the TQM/marketing management interface and their complementary nature in the formation of business strategies for improved performance. It is expected that merely introducing quality management system into organizations without considering integration with marketing activities and customer requirements would dilute the competitive power that TQM could deliver (e.g. quadrant A). On the other hand, high market orientation without paying appropriate attention to quality issues would be insufficient for business improvement due to high cost of quality (e.g. quadrant H).

It has been hypothesized in the previous section that there is a positive correlation between total quality orientation and market orientation in organization because of the similarity of their basic orientations and emphases. The low level of TQOR/MARKOR alignment in quadrant B and the discrepancies of the expected correlation that occur in quadrants such as H between the two management approaches, where the level of total quality orientation is low and the market orientation is high, as shown in Table 3.3 may suggest that there are some organizational impediments that prevent the TQM/marketing synergistic effects for improved organizational performance. Figure 3.5 shows the forces that may affect the TQM/marketing synergistic effect for improved business performance.
Figure 3.5 Forces Affecting TQOR/MARKOR Alignment for Improved Organizational Performance

The forces that are most likely to cause the low levels of total quality orientation and market orientation could be organizational factors that may include structures, systems, people and processes. Perhaps the gap model concerning the delivery of service quality developed by Zeithaml, Berry and Parasuraman (1988) can help to understand the causes of low levels of quality. In their model, the perceived service quality is explained as a gap between the performance expectations from customers and their perceptions of the delivered service quality. The model describes how service quality is compromised by different responsibility centers. The gap model is relevant for illustrating the variations in service quality levels arising out of management shortcomings. The gap model demonstrates the important issue of organizational factors including structures, systems, people and processes that may prevent the achievement of high level of service quality. The model displayed in Figure 3.5 helps to understand how the implementation problems and the organizational factors inhibiting high level of TQOR/MARKOR alignment may affect expected performance level.

Having hypothesized the relationships between a firm's total quality orientation and marketing orientation and their connection with organizational performance, it becomes important to explore and understand how quality management and marketing interacts in organization and the ways they contribute to organizational performance. In addition to test empirically the hypothesized relationships among total quality orientation, market orientation and organizational performance, the study was designed to explore the "how" and "why" questions regarding the level of quality
management and marketing implementation and the resultant performance level. The study was also designed to uncover the organizational impediments that might hinder the achievement of high level of TQOR/MARKOR alignment in organization. The qualitative studies were designed for this purpose. The methodology employed is discussed in Chapter four.

3.5 Summary

This chapter describes the TQM/marketing management interface and their synergistic nature. A conceptual model and specific hypotheses concerning the relationships of total quality orientation, market orientation and organizational performance were developed. The chapter also presents a table showing the envisaged firm's position with different levels of TQOR/MARKOR alignment and discusses the potential organizational dynamics that might affect the quality management and marketing relationships. The methodologies used in the study for operationalizing the research constructs, testing the conceptual model and the hypotheses stated, and obtaining insights on TQM/marketing management interface are discussed in the next chapter.
Chapter 4 -- Research Methodology

4.1 Introduction

This chapter discusses the research design, measurement issues, sample selection, methods for data collection and analysis, and the pretest results of the research instrument (survey questionnaire). Section 4.2 discusses the research design and methodology. Section 4.3 presents details concerning questionnaire and scale development for the quantitative research. Section 4.4 discusses issues concerning development of instrument for the qualitative research. Validity and reliability issues in both the quantitative (first phase) and qualitative research (second phase) are addressed in section 4.5. In section 4.6, the sampling frame in the first phase and the case selection criteria in the second phase of the study are outlined. The data collection procedures and methods for data analysis are described in section 4.7. The last section of this chapter presents questionnaire pretest results and the preliminary evidence of validity and reliability of the survey instrument.

4.2 Research Design

As the measures of total quality orientation, market orientation and organizational performance are typically applied to the level of business unit, the study used strategic business unit of an organization, or the whole organization as the unit of analysis if the whole of the organization is accredited to quality management systems such as the ISO 9000 series. To address the research issues more effectively, the study was split into two phases: quantitative research and qualitative research. The first phase of the study aimed to test the tenability of the conceptual model and the hypotheses stated in Chapter three by means of cross-sectional mail survey data. The use of mail survey, through a self-reported self-administered questionnaire, allowed a wide array of information regarding total quality orientation, market orientation and organizational performance to be collected from a large number of organizations, using measures of key variables of the three research constructs.

The target respondents for the mail survey questionnaire included the quality managers or the personnel (identified in the mailing list) responsible for quality
management in their organizations. Because of the traditional implementation of company-wide quality management, these informants were assumed to have a good understanding of the quality management systems in their organizations and the impact of such systems on their marketing practices and organizational performance. The hypotheses concerning the relationships among total quality orientation, market orientation, and organizational performance were tested with path analysis using linear structural equation modeling technique, i.e. LISREL.

In addition to the survey research, in-depth case analysis was conducted in the second phase with selected groups of survey respondents (organizations with high and low level of TQOR/MARKOR alignment respectively) to get a better understanding of TQM/marketing management interface and its impact on organizational performance, and to uncover the factors that might affect the TQM/marketing relationships. The intent of the second phase of the study was to 1) provide further evidence for the validity and reliability of the first phase study, 2) consolidate the conceptual framework developed based on literature review and empirical evidence from the survey research and provide additional support for the hypothesized relationships concerning the three research constructs, and 3) uncover the factors that might affect the hypothesized synergistic relationships of TQM and marketing on organizational performance by in-depth study of organizations with different levels of TQOR/MARKOR alignment. In addition, the open-ended semi-structured company interviews in the second phase of the study facilitated collection of valuable information concerning TQM/marketing management interface that was normally not possible with the structured questionnaire in the first phase.

The study used both the quantitative and qualitative research methodologies. Miles and Huberman (1994) called this approach a mixed strategy and suggested that it is often desirable to integrate variable-oriented and case-oriented approaches to data analysis. They contended that neither approach is "better" than the other, and they advised the use of correct combination of the two approaches as the study progress. The study was therefore designed to use a combination of quantitative and qualitative research methodologies in order to add to the strength of the evidence (Brewer and Hunter 1989; Brinberg and Hirschman 1986).
4.2.1 Quantitative Research: Large Sample Mail Survey (Phase 1)

Subjective measures for total quality orientation, market orientation and organizational performance were used with five-points interval scale in the quantitative phase of the study. The subjective measures were in the form of attitude statements with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. The informants were required to indicate their degree of agreement or disagreement with the attitude statements developed for measuring the three constructs. Subjective measures were chosen over objective measures in this phase of the study because of the different types and sizes of organization in the samples. Importantly, the variables involved in the study are not easily quantified in organization (e.g. corporate quality culture). The subjective measures facilitated comparison of organizations of various sizes and natures with relative measures. In the survey questionnaire, the respondents were required to rate (on a five-point scale) the level of total quality orientation and market orientation in their organizations, and the level of organizational performance achieved for the past three years represented by the questionnaire items. The measurement development of the research constructs is detailed in section 4.3.

The measures of the three constructs involved seventy-four scaled questions representing seventeen dimensions of the three constructs. A survey approach in this phase allowed for a large number of variables to be measured and systematically examined. Further, the target sample of the study involved a wide range of organizations with quality management in place. Survey research served as an effective vehicle for collecting information from different respondents and was useful in describing the characteristics of a large population which in turn enhanced the potential generalizability of the findings. In these regards, the survey research methodology was considered appropriate in this phase of the study as it provided a wide scope investigation both in terms of the number of variables and the number of respondents involved.
4.2.2 Qualitative Research: Case Studies and Executive Interviews (Phase 2)

At the quantitative stage, the processes associated with the implementation of TQM and marketing and their management interface may not be well understood. The quantitative analysis of the literature-based variables across large samples generally may be unable to capture the levels of TQOR/MARKOR alignment, the dynamics of how and why TQM and marketing are aligned in particular ways, the factors which might affect the TQM/marketing relationships, and the multiple stakeholder consideration which are too complex for survey research. Importantly, the cross-sectional survey captured a single point in time. There could be lags in alignment between business strategies, i.e. TQM and marketing implementation, and organizational performance. It is possible that firms move from one level to another level of quality management and marketing implementation. The survey results of the study were considered insufficient to capture the important aspects of temporal elements.

To supplement the large sample mail survey and to illustrate and describe managerial practices for understanding TQM and marketing management interface, a qualitative research was designed to address the issues not completely answered by the quantitative research. Qualitative research may serve these purposes and assist in developing new theory, grounded in detailed data (Glaser and Strauss 1967), that would further an understanding of the relationships between TQM and marketing and their impact on organizational performance. The benefits of combining the quantitative and qualitative techniques within a research method were not only for developing and extending theory of the three research constructs, but also to achieve between method triangulation through enhancing the output of the quantitative research with the rich and in-depth qualitative research data (Byrman 1988; Jick 1983; Sohal, Simon and Brown 1996; Strauss and Corbin 1990). To serve these research objectives in the second phase, semi-structured questionnaire was developed for in-depth executive interviews with the organizations, identified in the first phase of the study, showing different degree of TQOR/MARKOR alignment using case study approach.
The purpose of qualitative research was to provide more meaningful interpretations to the statistical analyses in the quantitative phase, i.e. the "how" and "why" questions being posed (Yin 1994, p.9). For example, does your company provide training to support the key performance objectives? How? Does the training provided cover all the employees? If "no", why? For detail, Appendices C and D respectively provide the questions and the case study protocol used in the qualitative research.

Case study was the preferred approach because of the "how" and "why" questions being posed (Yin 1994, p.9). It helps to capture novel findings (Eisenhardt 1989), and to understand how and why TQM and marketing interact in organizations. By comparing the similarities and differences with selected organizations that show different levels of total quality orientation and market orientation, i.e. high and low, theory concerning the impact of TQM on organizational performance and its relationships with marketing is expected to be developed. Because of the ability of the qualitative research to test and generate theory, the reasons why certain organizations achieve high level of total quality orientation and market orientation and how they could be implemented and with the results can be identified.

Following the strategy suggested by Miles and Huberman (1994), a combination of within- and cross-case analysis was undertaken. A total of four cases were to be selected, two with high level of total quality orientation and market orientation and two others with low level of total quality orientation and market orientation. The classification of organizations with respect to the degree of total quality orientation and market orientation is detailed in section 4.6.2. The within-case analysis provided a preliminary descriptive understanding of TQM and marketing management interface within each case and generated insights into how and why certain behaviors and activities occurred in the organizations being studied. Following from this, cases were subjected to cross-case comparisons in order to identify underlying similarities and differences between organizations and systematic associations between the variables. The multiple-case approach was adopted as it contributed to literal (similar pattern) and theoretical (different pattern) replication across cases. It facilitated patterns matching common to cases and theory to avoid chance associations (Eisenhardt 1991). The cases served in a manner similar to multiple experiments, with similar results (a literal replication) or contrary results (a theoretical explication) predicted
explicitly at the outset of the investigation. The replication logic allowed identification of the subtle similarities and differences within a group of cases as well as inter-group similarities and differences, enabling “how” and “why” questions to be confronted and new concepts to be identified (Eisenhardt 1989; Yin 1994). With the use of multiple cases-replicated design, the evidence from multiple cases was expected to be more compelling than results derived from a single case investigation, and the findings of the study could therefore be regarded as more robust. In addition, multiple sources data collection method was used in the qualitative phase of the study and the advantages of using the method is detailed in Appendix M.

4.3 Development of Instrument for Quantitative Research

TQM, marketing and management literature was reviewed to define the meaning and domain specifications for each construct under the study. The domain of market orientation was used intact from the MARKOR scale developed by Kohli, Jaworski and Kumar (1993) with some items adjusted for seminal differences in the East. The scale for total quality orientation was developed based on the work of Black and Porter (1996) which measures the critical components of TQM. Some unique items were added to the construct that are not covered by the work of Black and Porter (1996) in addressing total quality orientation. The organizational performance construct was uniquely defined for the study with the domain borrowed from the work of Weerakoon (1996) which captures the multi-dimensional nature of organizational performance.

Based on a panel review (academic staff and a group of research students in The Hong Kong Polytechnic University), the scales for the measures of total quality orientation, market orientation and organizational performance were initially refined. The scales were further refined through a pretest with quality practitioners and postgraduate students with knowledge in quality management to test the scales and the administration of the questionnaire (details and results are presented in section 4.8). During the panel review and questionnaire pretest, respondents were probed for comments on the appropriateness of each item and asked for a critique regarding the ease of comprehension and possible improvements in wordings. Results of the panel review and questionnaire pretest were used to purify the measures and to assess the
validity and reliability of the scales at the pretest stage. A large sample mail survey was conducted to gather data for test of the conceptual model and the hypothesized relationships among the research constructs. Details concerning development of the three research constructs in the study are discussed in the following sub-sections.

4.3.1 Operationalization of Total Quality Orientation Construct

To develop an instrument measuring total quality orientation in organization, it is important to articulate the underlying theory and concept in order to provide a foundation for content validity and to ensure that the instrument measures the construct. The research instrument must be valid and reliable enough to measure all the domains of total quality orientation.

The instruments of Saraph, Benson and Schroeder (1989), Flynn, Schroeder and Sakakibara (1994), and Ahire, Golhar and Waller (1996) were considered for adoption in measuring total quality orientation in the study. However, those instruments were found to be unsuitable for the study. The instrument developed by Saraph et al (1989) was considered not comprehensive enough to cover all the critical dimensions of TQM. It excludes at least two dimensions of TQM in the instrument, including customer focus and use of quality tools. The instruments of Flynn et al (1994) and Ahire et al (1996) are both manufacturing-focused that were deemed inappropriate to measure quality management across a wide variety of industries which was required by the study.

The criteria of MBNQA, which are the assessment framework for national leader in TQM in the United States, were initially considered as the foundation to measure total quality orientation in the study. Although it may not be possible to define total quality orientation by using the MBNQA framework, the criteria do address all aspects of TQM by using seven evaluation criteria and twenty sub-criteria (see Hertz 1997). The seven evaluation criteria outlined in the MBNQA include:

1) leadership,
2) strategic planning,
3) customer and market focus,
4) information and analysis,
5) human resource development and management,
6) process management,
7) business results.

Indeed, the criteria specified in the award are widely used and adopted as the blueprint of TQM. It has become the U.S. standard of excellence for TQM. Hart and Bogan (1992, p.4) supported this notion by stating that "Baldrige does define total quality management by identifying a full landscape of areas where organizations will want to be proficient in order to ensure their success and continuous improvement". In Hong Kong, our award (HKMA's award for quality management) which acknowledges company efforts in quality management efforts whose assessment criteria are also underpinned by the MBNQA framework. The MBNQA framework seemed to be relevant and satisfactory approach to measure total quality orientation in the study.

However, the MBNQA criteria are a set of guidelines for assessment of quality management efforts with a point scale (maximum point of 1,000) for the component parts of the guideline, namely areas to address. The original MBNQA guideline was deemed unsuitable for the study as the respondents might have difficulties in understanding the component parts of the guideline. Furthermore, the point scale used in the guideline is unevenly weighted, with the business results component receiving the heaviest weighing. If the point scale was directly adopted, this would limit the ability of the study to examine the quality management efforts of organizations with equal respect to all the domains of TQM.

To overcome the shortcomings of the MBNQA guideline, the study adopted the research instrument developed by Black and Porter (1996). The instrument extracts a series of items from the MBNQA criteria exclusive of the nonresults categories and combines with the items identified in the literature that are considered as critical components of TQM but not adequately covered in the criteria to evaluate organizational efforts at TQM on a five-points Likert type scale. As the intent of the Black and Porter's (1996) study was to identify the factors contributing to improved results, the results category of the MBNQA criteria was excluded. The additional
items in the instrument of Black and Porter (1996) which are not adequately covered in the MBNQA criteria include use of specific improvement tools, customer supplier chain concept, use of specific organizational structure to support quality improvement, management of suppliers, determination of cost of quality, encouragement of company-wide quality culture, and active leadership by management.

Black and Porter (1996) tested the instrument with over two hundred managers and they found that the instrument is valid and reliable for measuring the critical components of TQM. The empirical analysis conducted by Black and Porter (1996) resulted in ten critical factors of TQM with thirty-two items in the research instrument they developed. The ten critical factors of TQM generated from their study include:

1) people and customer management,
2) supplier partnerships,
3) communication of improvement information,
4) customer satisfaction orientation,
5) external interface management,
6) strategic quality management,
7) teamwork structures for improvement,
8) operational quality planning,
9) quality improvement measurement systems,
10) corporate quality culture.

As the instrument developed by Black and Porter (1996) represents literature-based, empirically tested elements of TQM implementation, the instrument was used and refined to measure total quality orientation in the study. However, some of the items in the Black and Porter’s (1996) instrument were found to be double-barreled in nature, i.e. two questions in one, during the panel review of the study. To make the double-barreled questions unique and more specific, those potentially confusing items (seven) were split into two, resulting in a thirty-nine items instrument measuring total quality orientation. Furthermore, the original instrument of Black and Porter (1996) was in items form. The respondents might find it difficult to indicate their perception on total quality orientation in their organizations with that format. In this regard, the
study changed the Black and Porter's (1996) instrument into the form of attitude statement with interval scale to facilitate rating on the questionnaire items. In addition, most of the questionnaire items in measuring total quality orientation were provided with examples to aid understanding of the items. The added examples in the questionnaire items were not available in the original Black and Porter's (1996) instrument and they were expected to contribute to the content validity of the construct.

4.3.2 Operationalization of Market Orientation Construct

In this study, the conceptual definition of market orientation was adapted from the work of Kohli and Jaworski (1990) because of the wide acceptance of their conception on market orientation. The construct used to measure market orientation was the reduced twenty-items MARKOR scale developed by Kohli et al (1993) which consists of three dimensions, namely market intelligence generation, market intelligence dissemination, and responsiveness to market intelligence.

The first dimension of the construct concerns the extent to which an organization generates intelligence from the market. The collection and use of market information have been the important aspects of market orientation (Narver and Slater 1990; Shapiro 1988). Market intelligence generation goes both formal and informal ways including discussions with trade partners, analysis of sales reports, customer attitude surveys, and beyond the verbalization of customer needs. It also includes analysis of exogenous factors influencing customer needs and preferences such as competitive actions, government regulations, and technological changes. The activities involved are organization-wide and should not be limited to certain organizational functions such as a marketing department (Kohli and Jaworski 1990).

The second dimension of the construct is about the extent to which market information is disseminated throughout the organization for organizational response to market needs. Market intelligence dissemination concerns the transmission of information from its points of collection to where it is required. Effective dissemination of market intelligence is vital since it provides a shared basis for concerted efforts by different functional areas. The flows of information, horizontal
and vertical, may be formal or informal. Formal channels of information flows involve newsletters, bulletins, company reports that may be circulated within and across functional areas. Informal channels of communications by their very nature are difficult to document, although “hall talk” was cited by Kohli and Jaworski (1990) as an example.

The third dimension represented by the responsiveness to market intelligence involves the development and execution of actions in response to the market intelligence generated and disseminated. Indeed, competitive advantage increasingly lies in a firm’s ability to use market intelligence (Menon and Varadarajan 1992). Responsiveness to market intelligence reflects the swiftness of an organization to develop and execute plans in response to the market needs. The activities involved include “selecting target markets, designing and offering products/services that cater to their current and anticipated needs, and producing, distributing and promoting the products in a way that elicits favorable end-customer response” (Kohli and Jaworski 1990, p.6).

The MARKOR scale appears to capture well the construct of market orientation. It has been tested and found to be a reliable scale that can be used across a variety of boundaries - companies, cultures and industries (Pitt, Caruana and Berthon 1996). The MARKOR scale was therefore directly adapted in the study to measure market orientation. However, minor modifications were made to the MARKOR scale to adjust for the seminal meanings to the Eastern culture in Hong Kong. For example, the wordings in the original instrument such as “in-house research” was changed to “all related research”, “it takes us forever to decide” was amended to “it takes us long time to decide”, “customer complaints fall on deaf ears in this business unit” was modified to “our company takes no action on customer complaints”. Similar to the development of the scale of total quality orientation, examples were added to some of the questionnaire items in the MARKOR scale. The added examples facilitated understanding of the questionnaire items that were expected to result in increase of content validity of the construct. All the twenty items were used to measure the market orientation construct.
4.3.3 Operationalization of Organizational Performance Construct

Performance measurement has been a controversial issue. Generally, financial performance indices have been used in the past (Daily and Dalton 1992). Even now, many studies concerning the relationships between business strategies and performance were confined to such indices (e.g. Hendricks and Singhal 1997; Narver and Slater 1994). However, the emerging management paradigms such as total quality orientation and market orientation emphasize a stakeholder perspective (Mohr-Jackson 1998; Lado et al 1998). Financial based measures seemed incompatible with the measure of TQM and marketing success. Since the study investigated into these emerging paradigms, stakeholder measures were therefore adopted to consider impact of such paradigms in the value chain involving multiple stakeholders. Indeed, many researchers have recognized the multidimensional nature of business performance (Daily and Dalton 1992; Venkatraman and Ramanujam 1986) and have called for empirical studies of associations between multiple stakeholder groups and performance (Kohli et al 1993). A number of studies using the stakeholder approach for measure of performance can also be found (e.g. Atkinson, Waterhouse and Wells 1997; Clarkson 1995; Doyle 1992; Greenley and Foxall 1997; Polonsky 1995).

In order to extend beyond financial performance measures and to consider the interests of multiple stakeholder groups, the multi model performance framework (MMPF) developed by Weerakoon (1996) was adopted for measuring organizational performance in the study. The MMPF model consists of four dimensions of organizational performance. They include employee motivation, market performance, productivity, and impact on society. The multi-dimensional nature of the model covers the satisfaction of various stakeholders such as customers, investors, employees, suppliers, and the society. As the influence of a firm strategy (e.g. implementation of TQM) usually only becomes apparent over a period of years, the study took into account both the immediate impact of strategic actions as well as the longer time frame in which strategy may also influence performance by measuring organizational performance of three years. Fifteen items were used to measure the organizational performance construct.
In consistence with the measures of total quality orientation and market orientation, perceptual measure was used to capture organizational performance in the first phase of the study. It was based on the respondents' assessment on the degree of organizational performance their organizations have achieved over a period of three years with the help of attitude statements on an interval scale. The use of the perceptual performance measures was preferred on the assumption that respondents would feel more prompted to respond and answer accurately as no revelation of company figures was necessary. With an anchor relative to the degree of organizational performance improvement, it allowed greater comparability across different types of organizations and industries. Indeed, many researchers (e.g. Dess and Robinson 1984) have advocated the use of subjective perceptual measure of performance that has been found to be a reliable means for measuring performance (Child 1975; Dess and Robinson 1984; Pearce, Robbins and Robinson 1987; Venkatraman and Ramaujam 1986) and has been employed in various studies to investigate relationships between performance and various aspects of management (e.g. Robinson and Pearce 1988; Verhage and Waart 1988). The validity of using subject perceptual approach to measure organizational performance was therefore warranted in the first phase of the study. To verify the subjective perceptual performance measures and to triangulate the evidence of organizational performance with different information sources, objective performance measures from secondary sources such as company policies, annual report and other publications were collected in the second phase of the study with some selected groups of companies.

4.3.4 Syntheses of Instrument Development for Quantitative Research

The instrument of the quantitative research used anchored scale with clear instructions provided in the survey questionnaire (see Appendix A). The survey questionnaire consists of four parts that include eighty-six questions covering four areas: 1) total quality orientation, 2) market orientation, 3) organizational performance, and 4) organizational detail. The first part contains thirty-nine items assessing the ten dimensions or critical factors of TQM representing total quality orientation that were developed in the form of attitude statement. Respondents were requested to rate the perceived level of total quality orientation in their organizations, using the construct items on a five-points scale.
The second part of the questionnaire contains twenty questions concerning the three dimensions of market orientation including market intelligence generation, market intelligence dissemination, and responsiveness to market intelligence. The three dimensions of market orientation were represented in the second part of the survey questionnaire by twenty items. The third part of the survey questionnaire is composed of fifteen items representing market performance, employee motivation, productivity and impact on society that are considered as the surrogate of organizational performance. Same as the first part, both the second and the third parts of the questionnaire required respondents to indicate, on a five-points scale, the perceived level of market orientation and organizational performance in their organizations with the construct items.

The fourth part of the questionnaire includes general questions for collection of organizational detail. The information collected in this part was used only for classification purpose and for contact with the respondents. The survey questionnaire is presented in Appendix A and the list of questionnaire items and their coding is presented in Appendix B.

4.4 Development of Instrument for Qualitative Research

Qualitative research using case study approach was conducted in the second phase of the study to supplement the quantitative research in order to explore the TQM/marketing management interface in organizations and to uncover the factors distinguishing high from low performers. According to Yin (1994, p.27), the first step in the case study approach is to develop theory, the second is case selection, and the study followed his recommendation that “theory development prior to the collection of any case data is an essential step in doing case studies”. As collection of data in the second phase of the study was free of prior theories, the survey questions in the first phase were used as a guiding framework for the development of the qualitative instrument, i.e. semi-structured questionnaire for interview, and for the coding and analysis of the interviews data. The case data collected help to confirm the hypothesized relationships among the constructs as stated in Chapter three and to validate those ideas outlined in Table 3.3 that illustrate the envisaged firm’s positions
with different level of TQOR/MARKOR alignment for theory development. Importantly, the case studies considered directly the causal processes at work between the constructs and addressed the explanatory questions of "how" and "why".

In brief, the development of the semi-structured questionnaire for the qualitative research was based on the framework of the first phase of the study and focused on the "how" and "why" questions. The framework includes the ten dimensions of total quality orientation, the three aspects of market orientation, and the four dimensions of organizational performance.

A case study questionnaire and a case study protocol were developed to collect the case data with focus mainly on the "how" and "why" questions around the underlying dimensions of the constructs of total quality orientation, market orientation, and organizational performance. The case study questionnaire and the case study protocol are presented in Appendices C and D respectively.

4.5 Validity and Reliability of the Research Instruments

Before data collection, problems regarding validity and reliability of the research instruments used in the study should be addressed. The validity of a measure refers to the extent to which it measures what is intended to be measured. Following Anderson and Gerbing (1982, 1988), Anderson, Gerbing and Hunter (1987) and Gerbing and Anderson (1988), three different types of validity were considered important for assessing the measures developed in the study: 1) content validity, 2) construct validity which includes unidimensionality, convergent validity and discriminant validity, and 3) nomological or criterion-related validity. The reliability of a measure refers to the degree to which observations are consistent or stable (Rosenthal and Rosnow 1984). Section 4.5.1 addresses the validity and reliability issues and how they were dealt with in the first phase of the study. Section 4.5.2 discusses those issues in the second phase and the actions taken to ensure validity and reliability.
4.5.1 Validity and Reliability of the Research Instrument: Quantitative Research

Content validity refers to the degree to which empirical measurement reflects a specific domain of the content. A measure has content validity if there is a general agreement among the subjects and researchers that the instrument has measurement items that cover all the content domain of the variables being measured (Nunnally and Bernstein 1994). Construct validity refers to three related issues - unidimensionality, convergent validity, and discriminant validity. Unidimensionality concerns the degree to which a set of items forming an instrument all measure an underlying construct. Convergent validity is the degree to which multiple attempts to measure the same concept with different methods are in agreement. Discriminant validity is the degree to which a concept differs from other concepts. A measure has construct validity if it measures the theoretical construct or trait it was designed to measure. Nomological validity refers to the degree to which predictions from a theoretical model are confirmed. A measure has nomological validity when relationship between the measure and an independent measure of relevant criterion is confirmed. Lastly, a measure can be considered reliable if it is free from random error and able to yield consistent results. Reliability measures how well the indicator variables serve as a measurement instrument for the latent variables.

The research constructs and the operational variables used in the study were backed by theoretical support. The concepts of TQM, marketing and organizational performance were well-defined in the past research. The total quality orientation construct was modified from the work of Black and Porter (1996) which measures the critical components of TQM. The market orientation construct was directly adopted from the MARKOR scale developed by Kohli et al (1993). The MMPF model developed by Weerakoon (1996), which captures the interests of multiple stakeholders and the multi-dimensional nature of performance measure, was adopted to measure organizational performance.

Content validity is not evaluated numerically, rather it is judged subjectively. The instrument used to measure the three research constructs in the study possesses content validity since selection of measurement items was based on an extensive
review of literature. To ensure content validity, the items for each research construct were pilot tested and critically reviewed by academic staff and research students in The Hong Kong Polytechnic University and by practicing managers. The research instrument was also pretested with another group of academicians and practitioners to get an understandable language and to correct any ambiguous items before the formal launch of the survey research. The panel review and the questionnaire pretest helped to ensure that content of each construct captures all the domains of the research constructs under the study and is well represented by the measurement items employed. Though the scales used were subject to minor modifications from their original instruments, they should have face content validity. Results of the panel review and questionnaire pretest are presented in section 4.8.

Because of the small sample size, unidimensionality, convergent validity and discriminant validity of the instrument were not tested in the pretest stage. The construct validity of each critical factor of the research constructs was evaluated by factor analyzing the measurement items of each of the critical factors of the constructs (through reliability test using Cronbach's alpha and item-total correlation analysis). According to Churchill (1979), a coefficient (Cronbach's) alpha should be the first measure to assess the quality of an instrument. The alpha has been a commonly used indicator for assessing the reliability of a measurement instrument employing interval scales (Peter 1979). Reliability test (using Cronbach's alpha) was run for each construct and their underlying dimensions to perform an initial evaluation of the internal consistency (reliability) of the items used in the study (Nunnally and Bernstein 1994). A cut-off point (0.7) for the alpha value suggested by Nunnally and Bernstein (1994, p.265) was used as a reasonable indicator of "fit". To determine the contribution of individual items to their underlying constructs, item-total correlation analysis was performed. To examine the nomological validity of the total quality orientation and the market orientation constructs, bivariate correlation coefficients were computed for the measures, i.e. average of the construct's items, of the two constructs with the measure, i.e. average of the construct's items, of the organizational performance construct. In both the item-total correlation analysis and the bivariate correlation, the coefficients were expected to be positive and high, i.e. 0.3 or above. These analyses should provide face evidence of validity and reliability of the survey research instrument in the pretest stage.
In addition to the reliability test and item-total correlation analysis, construct validity of the three research constructs including unidimensionality, convergent validity, discriminant validity and nomological validity were further assessed in the data analysis for the survey research with confirmatory factor analysis using LISREL (to be discussed in section 4.7.1). The criteria for evaluation of validity and reliability of the instrument in the quantitative research are shown in Appendix H.

Furthermore, the content validity and the nomological validity of the survey research instrument were further enhanced by collection of secondary data in the qualitative phase of the study to confirm the consistency of the respondents' perception on the levels of total quality orientation, market orientation and organizational performance in their organizations as measured by the Likert scale in the survey research. Congruency between the results of the survey research and the corresponding objective data from secondary sources should strengthen the validity of the survey research instrument. The secondary data collected in the qualitative research should provide independent objective criterion measures to ensure both the content and the nomological validity of the instrument in the quantitative phase.

4.5.2 Validity and Reliability of the Research Instrument : Qualitative Research

In the second phase of the study, qualitative research was conducted with selected companies showing different degree of TQOR/MARKOR alignment. Certain procedures were followed to ensure that the constructs under the study were reflected by the research approach: case study. Validity in the qualitative research was assisted by using multiple sources of evidence (e.g. archival data) and not relying solely on company interviews such that the inquiry tend to converge on the facts of the cases when the evidence is triangulated from the different data sources (Jick 1979; Parkhe 1993). The use of multiple sources of evidence means that case studies can benefit from multiple measures of the same phenomenon and have the potential to achieve higher level of construct validity than research methods that rely only on single sources of information (Yin 1994, p.92). The multiple evidence approach used in the study assumed that the responses obtained would converge with secondary data if there is no method bias.
Another way employed by the study to establish construct validity was via the maintenance of a chain of evidence throughout the case studies. This operational tactic also improved the reliability of the information included in the case studies. The chain of evidence established the connections between the research questions of a case through to the case's conclusions. The guiding principle to be observed is whether an external reader is able to see how the evidence collected both addresses the research questions and supports the conclusions drawn (Yin 1994, p.98). In the qualitative study, an interview questionnaire and a case study protocol were used to collect data. Each interview was transcribed and then coded and a short summary of the contact was produced immediately after each interview. A provisional list of basic codes was devised prior to the fieldwork. The three master codes were TQOR, MARKOR, PERFORM, representing total quality orientation, market orientation and organizational performance. Subcodes were added (e.g. TQ1, TQ2, TQ3) to further categorize information within each of the main codes. However, not all codes were pre-specified, if new insights surfaced during data collection, transcription and the subsequent analysis, additional codes were to be added. In addition, the interview results were combined with other documentary evidence provided by the interviewed organizations to produce a detailed case study report on each one. As a result, the case reports show how the interview questions were asked and how the case study protocol was actually implemented with respect to the evidence outlined.

The final technique used by the study for satisfying the test of construct validity was to have the interviewees review draft copy of their case reports. While the interviewees might disagree with the interpretation of the evidence and the final conclusions drawn, it is essential that there is no disagreement over the actual facts of the cases. This review process was employed and was considered by the study an important procedure for establishing accuracy of the case studies and hence increasing the construct validity of the qualitative study (see Yin 1994, pp.144-6).

As for the issue of reliability in the qualitative research, it is concerned with minimizing the errors and biases inherent in the study. Yin (1994, p.57) suggested that the best way to approach the issue of reliability "is to make as many steps as possible as operational as possible, and to conduct research as if someone were always looking
over your shoulder". This was satisfied by making explicit the case study procedures such that other researchers can end up with the same results when they do the same cases over again. The tactic employed by the study to achieve reliability was the use of a replicable field guide or a case study protocol that outlines philosophies, procedures and questions to direct the data collection activities and to guide data reporting (Yin 1994, p.63). In the qualitative study, each interview began with introductions, objectives, agenda and ethical issues such as disguising the organizations in the report, followed by non-directive questions about their TQM and marketing experience leading to the final probes about their critical success/failure factors. The use of a case study protocol helped to ensure consistency in the investigation of individual cases and therefore established reliability of the findings derived from a multiple-case design in the qualitative research (Miles and Huberman 1984).

4.6 Sample Selection and Methods of Data Collection

4.6.1 Samples for the Quantitative Research

To ensure that the respondents have a quality management system running in their organizations, the population sampled in this study consists of all the companies in Hong Kong practicing quality management. This study used a sampling frame which covers all the business units/organizations in Hong Kong (referred to as companies below) known to have a quality management system. The sampling frame is used as the sample of the population. The sampling frame included the HKMA' quality award winners and finalists, and the ISO-certified companies listed in the buyer guides of HKTDC and HKQAA. The HKMA's quality award is modeled on the MBNQA whose criteria are widely accepted as the blueprint of TQM. Such a sample helped to ensure that the surveyed organizations are employing TQM at a reasonably high level. However, the population of the HKMA's quality award winners and finalists was small and the number was only ten (since the award was only established in 1991 and the finalists were only made known for the award in 1997). Larger sample size was required to justify the results and to make statistical inferences. In order to have a large sample for generalization, over 1000 business units/organizations listed in the publication by HKTDC named "ISO 9000 Certification Buyer's Guide 1997" was
targeted. The companies listed in the guide are registered with ISO 9000 series certifications by all the certification bodies in Hong Kong. The list of companies from a buyer guide issued by HKQAA (assessed through internet updated to January 1998), where organizations are certified by HKQAA only, were also included in the survey. The ISO 9000 series certification implies a quality management system running in these organizations, though may not be exactly the "total", or "organization-wide" package. However, it was assumed that those ISO-registered companies are TQM-oriented, as ISO registration is considered as a step towards the implementation of TQM (Bredrup 1995). Action was taken to check the companies in both the buyer guides and the HKMA’s list to avoid duplication of companies (e.g. the HKQAA listed companies was taken out from the HKTDC buyer guide). The three groups of companies targeted (HKMA, N=10; HKTDC, N=553; HKQAA, N=855) were intended for the mail survey and the resulting data were used to test the conceptual model and the hypothesized relationships among the three research constructs as stated in Chapter three. These groups in fact constituted the population of companies acknowledged by third parties as practicing quality management. After the cross-check in the three groups for duplication of companies, the resulting targeted sample companies for the quantitative research was 1,092.

Indeed, there is not a definitive answer to the sample size needed to estimate the conceptual model presented in Chapter three and to achieve a reliable chi-square statistic for the structural equation model testing. The sample size needed is centered on the fitting function and the number of parameters to be estimated (methodologies for data analysis and model estimation are to be discussed in section 4.7.1). It has been suggested that the chi-square statistic for structural equation model testing is not accurate for sample size under 50 (Anderson and Gerbing 1988). Thus, a larger sample size, i.e. 150 or more, was desired in the quantitative study as supported by Anderson and Gerbing (1988). They found that sample with less than 150 observations may lead to noncoverage, and thus to unreliable results.

4.6.2 Case and Interviewee Selection Criteria for Qualitative Research

Selection of cases in the quantitative study used the principles of literal and theoretical replication (Yin 1994), that is, organizations were chosen which were
expected to produce the same results and the different results respectively. Eisenhardt (1989) stated that in the multiple-case approach there is no ideal number of cases, but suggested that a study of between four and ten cases usually works well. With fewer than four, theory is difficult to generate and with more than ten cases, the volume of data is difficult to cope with. Cases were chosen as literal replications from each of these two theoretical replication conditions: organizations with high level of TQOR/MARKOR alignment (two) and organizations with low level of TQOR/MARKOR alignment (two). A total of four companies were selected for the qualitative research. It would have been beneficial to select more than four (the minimum specified) companies for the qualitative research. However, responses for participation in the qualitative research were poor. Section 5.8 provides further detail concerning case selection for the qualitative research.

The cases were identified according to the responses in the survey research that indicated the degree of total quality orientation and market orientation in the responding organizations. For each construct of total quality orientation and market orientation, the actual level of practice can be represented by the average of the measurement item ratings for that construct. The average is referred to as composite score later in the study. Provided the scales used in the study measuring the three constructs possess sufficient validity and reliability, the composite scores of the three constructs were used to profile the level of total quality orientation, market orientation and organizational performance in an organization. The use of composite score facilitated classification of organizations with respect to their level of total quality orientation, market orientation and organizational performance level. Accordingly, the organizations responded to the quantitative phase of the study were to be classified as either high, medium, or low performers by the composite scores they reported in each of the research constructs. For example, the composite score of total quality orientation was used as a profile of an organization's level of total quality orientation. Organizations giving a composite score exceeding 3.5 (maximum is 5) in total quality orientation construct were classified as high performers in that construct. Alternatively, organizations giving a composite score in the range of 2.5 and 3.5 and below 2.5 were categorized as medium performers and low performers respectively. The same procedure was employed to identify organization's position in the constructs of market orientation and organizational performance. To facilitate literal
and theoretical replications, two organizations with high level of TQOR/MARKOR alignment (high composite score in the constructs of total quality orientation and market orientation), and two organizations with low level of TQOR/MARKOR alignment (low composite score in the constructs of total quality orientation and market orientation) were considered for in-depth case studies in the qualitative phase of the study. On the other hand, the composite scores computed for the three research constructs under the study provided a general description of the level of total quality orientation, market orientation, and organizational performance among companies in Hong Kong.

4.6.3 Methods of Data Collection

For the quantitative research, the survey questionnaire was posted twice. The questionnaire was mailed to the 1,092 business units/organizations with a quality management system in place. To secure high response rate for the survey research, attempts to improve the response rate were undertaken. A covering letter explaining the objectives of the study, the significance of the study to the Hong Kong businesses and to theory development, and the procedures for completing the questionnaire were attached with each survey questionnaire to appeal participation in the study. The letter also assured the respondents of the confidentiality of individual responses to the study. A self-addressed stamped return envelope was enclosed in each questionnaire with the contact telephone and fax number for the study provided in the covering letter to facilitate the questionnaire return and correspondence. After the first mailing, a second round of questionnaire mailing was undertaken to the non-respondents one month later, with a reminder letter highlighting the significance of the study. A replacement questionnaire was attached in the second mailing in case the respondents misplaced the questionnaire in the first mailing. The cover letters to appeal participation in the first and the second mailings are presented in Appendices E and F respectively.

The respondents who belonged to the selection criteria for the qualitative research and who indicated interests in the qualitative phase of the study were contacted for company interviews. As multiple sources of evidence was used in the case study method, data were collected, if possible, from quality managers, marketing managers
and other managers who occupied key roles in their TQM and marketing related activities. The companies invited for interviews were requested to nominate other informants from quality and marketing areas to facilitate the multi-informants case studies. During the interviews, the companies involved were requested to provide secondary data such as annual reports and quality manual to cross check their answer provided in both the quantitative and the qualitative phases of the study. If each firm interviewed had two or more respondents, they were interviewed separately. All interviews were tape-recorded with the informants’ permission and subsequently transcribed. Direct observation was also made through on-site visits. The invitation letter for participation in the qualitative phase of the study is presented in Appendix G.

In the qualitative research, all interviews were conducted by the author and each lasted for at least two hours. Those participating in the interviews were sent, in advance, an outline of the topics, i.e. the case study questionnaire, that would be discussed. The interview procedures followed strictly the guidelines laid down in the case study protocol.

4.7 Methods of Data Analysis

4.7.1 Data Analysis for Quantitative Research

Except the model estimation, all data analyses in the quantitative phase of the study, for example, frequency distribution, descriptive statistics, item-total correlation analysis and reliability test were performed using SPSS 8.0 for windows. Model estimation was conducted with structural equation modeling technique using LISREL 8 (Jöreskog and Sörbom 1996), the technique referred later as LISREL. The rationale of using the LISREL approach of model estimation is presented in Appendix J. The matrix used for model estimation and the criteria for evaluation of the model fit are explained in Appendices K and L respectively. Before performing analyses with LISREL, data checks for normality and examination of outliers were performed by PRELIS 2, the associated package with LISREL 8.
In general, model estimation is separated into two distinct steps: 1) assessment of the quality of the measurement model, and 2) analysis of the structural model (Anderson and Gerbing 1988; Hughes, Price and Marrs 1986; Jöreskog and Sörbom 1996). Measurement model specifies how the latent variables or hypothetical constructs are measured in terms of observed variables or indicators, and it describes the measurement properties (validity and reliability) of the observed variables. In this study, indicator variables were drawn from the seventy-four numbered questionnaire items. Primary attention was given to the confirmatory factor analysis and the development of the higher order constructs, i.e. total quality orientation - TQOR, market orientation - MARKOR, and organizational performance – PERFORM, in the model that are to be estimated using composite scores. Appendix I presents the rationale of using composite scores for evaluation of higher order constructs and the unidimensionality issues. The structural model specifies expected or causal relationships among the latent variables or hypothetical constructs and describes the causal effects and the amount of unexplained variance (Jöreskog and Sörbom 1989, p.2). The “proposed” model in this study combines the measurement model and the structural model to form into a structural equation model or overall measurement model. The structural equation model depicted in Figure 4.1 was used to assess the simultaneous impact of total quality orientation and market orientation on organizational performance which can also be represented by the following equation:

$$\eta_1 = \gamma_{1.1} \xi_1 + \gamma_{1.2} \xi_2 + \xi_1$$

$$\xi_1 = \text{TQOR}$$

$$\xi_2 = \text{MARKOR}$$

$$\eta_1 = \text{PERFORM}.$$

At the measurement stage of the model, specification is confirmatory in that relationships between observed variables and latent constructs are defined a priori (e.g. TQ1 to TQ10 in TQOR construct in Figure 4.1). Items in the confirmatory factor analysis were forced to load on their prespecified factor or construct, cross construct loading was not allowed and set to zero. The hypothesized constructs were tested to determine if they are consistent with the data collected. If the constructs were rejected
by the data, problems with the constructs were determined and the ways to modify the constructs to better fit the data would be specified through modification indices provided by LISREL 8 and theory evidenced in the literature. The objective of this first step is to assess the validity and reliability of the observed and latent variables and to determine the goodness-of-fit of the measurement model to the data prior to the simultaneous estimation of the measurement models and the structural model.

The second step is the estimation of the structural (overall measurement) or full model i.e. the structural relationships among total quality orientation, market orientation and organizational performance as shown in Figure 4.1. The objective of the second step is to find values for the model parameters that minimize the difference between the actual covariance among the observed variables and the covariation implied by the conceptual model. Testing the structural model may be meaningless unless it is first established that the measurement model holds (Jöreskog 1993). Anderson and Gerbing (1988) proposed that though simultaneous estimation of all parameters in a LISREL (overall measurement) model is possible, there is much to gain in theory testing and assessment of construct validity from separate estimation (and respecification) of the measurement models prior to estimation of the full model.

In addition to the traditional methods for scale measurement (e.g. reliability test and item-total correlation analysis), confirmatory analysis with LISREL was performed to develop the three measurement models and to determine if each of the variables, as suggested in the proposed framework, load on their underlying constructs (Anderson and Gerbing 1988; Hair, Anderson, Tatham and Black 1998). The use of confirmatory factor analysis allows for explicit representation of the degree of correspondence between observed measures and latent concepts (Gerbing and Anderson 1988) and for unambiguous assignment of meaning to the estimated constructs. The seventy-four questionnaire items were analyzed to reduce to three factors with seventeen domains expected to represent the underlying constructs of total quality orientation (39 items), market orientation (20 items) and organizational performance (15 items) as illustrated in Figure 4.1.
Figure 4.1 Conceptual Model of Total Quality Orientation, Market Orientation and Organizational Performance
It should be noted that the measurement model development in this study took place sequentially. First, confirmatory measurement factor models were assessed for each of the proposed dimensions (lower or first order constructs) of the three higher (second) order constructs i.e. total quality orientation, market orientation and organizational performance. Next, composite scores of the lower order constructs were developed, i.e. by taking the arithmetic mean of the observable items of the first order constructs, for estimation of the measurement models at the higher order level upon confirmation of the proposed factor structure at the first order level. This made for a total of three measurement models and the composite scores were used for assessment of both the measurement models and the structural model at the second order level. After the establishment of the three measurement models, the structural model was estimated and used to test the structural relationships among the constructs using path analysis.

Estimation of structural model using path analysis gives insights into the causal ordering of variables in a system of relationships. In path diagram, theorized causal relationships are represented by uni-directional arrows linking two variables together. A correlational relationship between two variables, for which causality is unknown but a relationship exists nonetheless, is depicted as two variables connected by a bi-directional arrow. Figure 4.1 depicts the direct causal relationships between total quality orientation and organizational performance, and between market orientation and organizational performance with the uni-directional arrows. The figure also shows the correlational relationship between total quality orientation and market orientation by a bi-directional arrow. Paralleling multiple regression analysis, path analysis uses the error term (disturbance term e.g. zeta), to capture the effects of all other variables not explicitly captured in the path diagram. The path analytical results can be interpreted in a manner consistent with the evaluation of multiple regression results. Test of the significance of path coefficients and the overall significance of individual relationship can be examined by t-value and the parameter coefficient (e.g. gamma and phi) respectively. The t-value indicates whether or not a path coefficient differs statistically from zero, that is, whether or not the hypothesized linear relationship holds. The parameter coefficient (e.g. gamma and phi), on the other hand, indicates the amount of variance in the dependent variable (or independent variable denoted by phi) which is accounted for by the variables entered the path or structural equation.
In summary, statistical relationships among the constructs as shown in Figure 4.1 were examined with the two step approach using LISREL to determine the empirical support received for each of the measurement models and then the structural model. A confirmatory measurement model specifies the relations of the observed measures to the underlying constructs; a confirmatory structural model specifies the causal relationships of the constructs to one another (Gerbing and Anderson 1988). The measurement model was tested first (Jöreskog 1993). Once a reasonable fit had been established for the measurement models, the structural model was tested.

4.7.2 Data Analysis for Qualitative Research

Data analysis in the qualitative research adopted the elements of total quality orientation and market orientation developed in the first phase to address the intricacies of TQM/marketing management interface and their implications on organizational performance. For example, the hypotheses developed in Chapter three concerning the relationships among total quality orientation, market orientation and organizational performance helped to focus the case investigations on causal relationships while ignoring other important irrelevant data. When analyzing the data, each case was looked at as a separate entity and was compared to the theoretical issues being studied with the data collected including the quantitative results and the documentary evidence. Cross-case comparison was made to understand the success and non-success factors within each case and to determine the similarities and differences between cases.

Two analytic techniques suggested by Yin (1994) were used to analyze the data: pattern matching and explanation-building. First “pattern matching logic” (Yin 1994, p.106) was used to compare the actual pattern and the expected pattern. Within this context, it was used to compare empirically based pattern in quality management and marketing practices with the predicted one (both theoretical and survey based). If the patterns coincided, similar results within the same categories (e.g. high level of TQOR/MARKOR alignment) were expected. Yin (1994, p.46) referred to this as literal replication. Firms within the same category were expected to behave in the same way. For example, the study hypothesizes that the level of total quality
orientation in a firm affects positively its organizational performance. If the case shows that for the most parts these causal relationships hold, then the causal relationship can be inferred. In addition, if such relationships hold true across multiple cases, literal replication of the single cases would have been accomplished, and the cross-case results might be stated even more assertively. Alternatively, systematic differences between each category were expected. This is referred to by Yin (1994, p.46) as theoretical replication. In the qualitative research, cases in each category were expected to behave differently because of the different level of TQOR/MARKOR alignment. At the very least the evidence was examined from several different perspectives.

The second analytic technique used was “explanation building”(Yin 1994, p.110). The hypothesized relationships among the three constructs in the study were developed by asking “how” and “why” questions. The underlying dimensions of total quality orientation, market orientation and organizational performance constructs were adopted as a guiding framework for the development of interview questions, coding and analysis. Each interview was coded and summarized in terms of this framework and a few other general concepts that emerged as relevant. For example, for the total quality orientation/organizational performance associations, the question ask “Does your companies encourage employee participation to support the key performance objectives? how? do the schemes cover all the employees? if “no” why?”. The development of such questions allowed analysis to focus on specific data, thus overcoming the major problem with the case study approach - the huge volume of data that is generated. The individual summaries were then compared to develop a with-case analysis for each company. Cross-case comparisons were then conducted to provide insights into how activities and issues relating to how a total quality orientation and a market orientation vary across companies and thus “to identify configurations that hold in some settings but not in others” (Huberman and Miles 1994 p.435). The analyses provided a description of the similarity and contrast among the cases.
4.8 Results of Pilot Study and Questionnaire Pretest for the Quantitative Research

The preliminary draft of the seventy-six items survey questionnaire measuring the three constructs of total quality orientation, market orientation and organizational performance was developed and then distributed to academic staff, research students and practicing managers for pilot test in the form of panel review. Eighteen draft questionnaires were sent out (nine to research students/personnel and two to academic staff in The Hong Kong Polytechnic University, and seven to practicing managers in a voluntary organization called the Hong Kong Total Quality Forum which actively promotes TQM in Hong Kong. The purpose of this exercise was to develop a structured questionnaire by confirming the concepts in the literature review. In addition, this exercise ensured the adequacy of the survey questionnaire to measure the three constructs and whether or not the respondents clearly understand the questionnaire items. All the questionnaires were returned and all the respondents appeared to understand the elements in the questionnaire. However, changes in wordings were made to some questionnaire items.

After the panel review, a pretest of the survey questionnaire was conducted prior to the formal launch of the survey research. The purpose of the questionnaire pretest was to ensure clarity and comprehension, to test the administration of the survey research and to gauge the average completion time (approximately twenty minutes) of the survey questionnaire before the large sample mail survey. The pretest helped to ensure that items in the survey questionnaire conform to the constructs of total quality orientation, market orientation and organizational performance. The questionnaire was pretested with quality practitioners and working part-time postgraduate students having knowledge in quality management. In January 1998, pretest of the survey questionnaire was conducted with two classes of Msc (N=30) and MBA (N=24) students of The Hong Kong Polytechnic University. The reasons for choosing the postgraduate students were based on the ground that some of them are quality practitioners undertaking a module in quality management in the University. They were assumed to have the knowledge to understand the research constructs in the questionnaire. The questionnaire was distributed in the classes. The significance of
the study, the amount of estimated time required for questionnaire completion, and the potential issues and ambiguities were explained in the questionnaire pretest. Respondents were asked to write comments on the questionnaire if the instruction in the questionnaire was unclear, and to indicate the items that were not understood. To avoid disruption of the class activities, the respondents were not required to fill in the questionnaire in the classes. Rather they were provided with self-addressed stamped envelopes to return the questionnaire.

Similarly, the questionnaire was pretested with a group of quality practitioners (N=8) in a seminar talk organized by the Hong Kong Total Quality Forum. During the questionnaire pretest with them, they were requested to comment on the appropriateness of the questionnaire items, criticize their ease of comprehension and suggest changes to improve the wordings of the questionnaire items.

A total of 35 questionnaires were returned from the three groups of the pretest samples (N=62), thirty-one from the postgraduate students and four from the quality practitioners. Commentary received from the respondents was positive and encouraging. In general, the pretest results indicated that the content of each construct was well captured by the measurement items employed. Minor revisions were made in the question wordings and orders as a result of the questionnaire pretest. Two items in the organization performance constructs "The level of dividends paid to our stockholders has been continuously improving in the past three years", and "The value of export earnings of our company achieved has been continuously increasing in the past three years" were eliminated. The two items were deleted because they were not deemed applicable to the respondents or the respondents did not have the knowledge to answer. Considering the feedback from the questionnaire pretest, the survey questionnaire was refined with minimal changes and the elimination of two items. A revised final survey questionnaire was developed with seventy-four items remained for the three constructs. The resulting questionnaire is presented in Appendix A. Results of the questionnaire pretest and the evidence of validity and reliability of the survey research instrument at the pretest stage are discussed below. Tables 4.1 to 4.3 provide summary of the results of the questionnaire pretest. Items followed by (R) were reversed coded.
To test construct validity in the pretest stage, reliability test (using Cronbach’s alphas) and item-total correlation analysis were used. Items that did not strongly contribute to the alpha were considered for elimination. Tables 4.1 to 4.3 show that the alpha values for the scales measuring the ten dimensions (first order constructs) of total quality orientation, three dimensions of market orientation and the four dimensions of organizational performance all equaled or exceeded 0.60, and that most did so by a substantial margin, indicating that the scales performed well form an internal consistency perspective. Though some dimensions, i.e. MO1=0.68, OP4=0.60, were marginally below the cut-off point (0.70) suggested by Nunnally and Bernstein (1994) for the alpha value, they were accepted as reliable because their underlying items contributed significantly to them in the item-total correlation analysis, i.e. loading exceeded 0.30. The alpha values of the ten dimensions of total quality orientation ranged from 0.70 to 0.91. For the three dimensions of market orientation and the four dimensions of organizational performance, the values of the alphas ranged from 0.68 to 0.78, and 0.60 to 0.87 respectively. In addition, except the two items “Slow to alter other department when something important to the market is found” in the market orientation construct, and “Improves in the level of consumer rights” in the organizational performance construct, whose values (loadings) were both 0.2, all the items significantly loaded on their expected constructs (first order factor) in the item-total correlation analysis, the loading ranged from the lowest of 0.32 to the highest of 0.90. The two items were retained because of the acceptable alpha values of 0.76 and 0.60 respectively, and the theoretical support received for their existence. Decisions to eliminate the two items were left to the further analysis, i.e. confirmatory factor analysis upon collection of evidence from the survey research. It was concluded that all the items had been appropriately assigned to the scales in the questionnaire pretest stage.

Since all the scales were considered satisfactory in the reliability test and item-total correlation analysis, the items reported in Tables 4.1 to 4.3 were combined and formed into composite scores (equally weighted) to represent the first order constructs they belong to for the assessment of the alpha values of the constructs at second order level, i.e. total quality orientation, market orientation and organizational performance. The alpha values for the three second order constructs are also displayed in Tables 4.1 to 4.3. They all appeared to significantly exceed the cut-off point (0.70) and the
values ranged from 0.75 to 0.95. To assess nomological validity of the constructs, composite scores were formed again from the first order level, i.e. average of the composite scores of the first order constructs, for the three second order constructs to perform bivariate correlation analysis. The results of the bivariate correlation analysis presented in Table 4.4 show that both total quality orientation and market orientation significantly correlate with organizational performance in a positive direction with the coefficients of 0.70 and 0.39 respectively, indicating that the two measures have a reasonable degree of nomological validity in the pretest stage.

In summary, the traditional measures for scale in the pretest stage (e.g. reliability test and item-total correlation analysis) indicated that the survey questionnaire was performing well. All the alpha values equaled or exceeded .60, in the majority of cases, they exceeded .70, the benchmark Nunnally and Bernstein (1994) established for instrument in exploratory research. Except two items, all the items appeared to load on the constructs they were expected in item-total correlation analysis. In addition, the constructs of total quality orientation and market orientation were found to possess nomological validity. These analyses suggested that, although more work could be done to increase the validity and reliability of the constructs, they were left to the further analysis upon collection of data in the survey research. The survey questionnaire was then considered acceptable and defensible in the pretest stage and was deemed appropriate for use in the survey research.
<table>
<thead>
<tr>
<th>Item Code</th>
<th>Item</th>
<th>Mean</th>
<th>S.D.</th>
<th>Item-total Correlation First Order</th>
<th>Cronbach's alpha First Order</th>
<th>Item-total Correlation Second Order</th>
</tr>
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<tbody>
<tr>
<td>TQ</td>
<td>Total Quality Orientation (Second Order) Cronbach's alpha = 0.95</td>
<td>3.37</td>
<td>0.79</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>TQ1</td>
<td>People and Customer Management (First Order)</td>
<td>3.42</td>
<td>0.84</td>
<td>0.77</td>
<td>0.83</td>
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<tr>
<td>P1</td>
<td>Sets strategic human resources management objectives</td>
<td>3.60</td>
<td>1.14</td>
<td>0.44</td>
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<tr>
<td>P2</td>
<td>Monitors effectiveness of quality education and training</td>
<td>3.29</td>
<td>1.02</td>
<td>0.72</td>
<td></td>
<td></td>
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<tr>
<td>P3</td>
<td>Uses employee recognition and performance measurement scheme</td>
<td>3.37</td>
<td>1.19</td>
<td>0.63</td>
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</tr>
<tr>
<td>P4</td>
<td>Employs proactive customer relations</td>
<td>3.46</td>
<td>1.01</td>
<td>0.55</td>
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<tr>
<td>TQ2</td>
<td>Supplier Partnerships (First Order)</td>
<td>3.46</td>
<td>0.97</td>
<td>0.80</td>
<td>0.75</td>
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<tr>
<td>S1</td>
<td>Audits supplier quality</td>
<td>3.34</td>
<td>1.26</td>
<td>0.68</td>
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<td></td>
</tr>
<tr>
<td>S2</td>
<td>Improves quality and responsiveness of suppliers</td>
<td>3.43</td>
<td>1.20</td>
<td>0.73</td>
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<tr>
<td>S3</td>
<td>Considers suppliers as associates</td>
<td>3.60</td>
<td>0.98</td>
<td>0.54</td>
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<tr>
<td>TQ3</td>
<td>Communication of Improvement Information (First Order)</td>
<td>3.09</td>
<td>0.94</td>
<td>0.83</td>
<td>0.85</td>
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<tr>
<td>I1</td>
<td>Employs quality costs</td>
<td>2.91</td>
<td>1.29</td>
<td>0.63</td>
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<td></td>
</tr>
<tr>
<td>I2</td>
<td>Assesses needs for quality education and training</td>
<td>3.34</td>
<td>1.19</td>
<td>0.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I3</td>
<td>Benchmarks processes in non-competing organizations</td>
<td>2.80</td>
<td>1.05</td>
<td>0.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I4</td>
<td>Interacts with outside groups for quality improvement</td>
<td>3.31</td>
<td>1.08</td>
<td>0.57</td>
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<td></td>
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<tr>
<td>TQ4</td>
<td>Customer Satisfaction Orientation (First Order)</td>
<td>3.44</td>
<td>0.95</td>
<td>0.91</td>
<td>0.79</td>
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<tr>
<td>C1</td>
<td>Promotes trust and confidence in products/services</td>
<td>3.85</td>
<td>1.02</td>
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<tr>
<td>C2</td>
<td>Evaluates competitors with respect to the level of customer satisfaction</td>
<td>3.21</td>
<td>1.15</td>
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<tr>
<td>C3</td>
<td>Evaluates customer satisfaction with internal performance objectives</td>
<td>3.35</td>
<td>1.15</td>
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<tr>
<td>C4</td>
<td>Determines and improves customer satisfaction</td>
<td>3.56</td>
<td>1.11</td>
<td>0.78</td>
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<tr>
<td>C5</td>
<td>Benchmarks direct competitors products/services</td>
<td>3.35</td>
<td>1.23</td>
<td>0.89</td>
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<tr>
<td>C6</td>
<td>Benchmarks direct competitors processes</td>
<td>3.29</td>
<td>1.24</td>
<td>0.85</td>
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Table 4.1 Results of Questionnaire Pretest for Total Quality Orientation Construct
<table>
<thead>
<tr>
<th>Item Code</th>
<th>Item</th>
<th>Mean</th>
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<th>Cronbach’s alpha First Order</th>
<th>Item-total Correlation First Order</th>
<th>Item-total Correlation Second Order</th>
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<tbody>
<tr>
<td>TQ5</td>
<td><strong>External Interface Management (First Order)</strong></td>
<td>3.54</td>
<td>0.95</td>
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<td>0.77</td>
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<tr>
<td>E1</td>
<td>Recognizes social responsibilities</td>
<td>3.53</td>
<td>1.16</td>
<td>0.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2</td>
<td>Determines customer’s future requirements</td>
<td>3.68</td>
<td>1.09</td>
<td>0.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E3</td>
<td>Ensures new product development process meet customer requirements</td>
<td>3.35</td>
<td>1.15</td>
<td>0.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ6</td>
<td><strong>Strategic Quality Management (First Order)</strong></td>
<td>3.21</td>
<td>0.85</td>
<td>0.84</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>Q1</td>
<td>Links processes to customer and design requirements</td>
<td>2.94</td>
<td>1.19</td>
<td>0.71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q2</td>
<td>Managers take active leadership to reinforce company’s quality value</td>
<td>3.29</td>
<td>1.18</td>
<td>0.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q3</td>
<td>Satisfies intrinsic reward of employees</td>
<td>3.09</td>
<td>1.22</td>
<td>0.57</td>
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<tr>
<td>Q4</td>
<td>Satisfies extrinsic reward of employees</td>
<td>3.40</td>
<td>1.09</td>
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<tr>
<td>Q5</td>
<td>Top management commits to quality improvement through involvement</td>
<td>3.34</td>
<td>1.11</td>
<td>0.80</td>
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<tr>
<td>Q6</td>
<td>Implements long-terms plans based on customer needs</td>
<td>3.14</td>
<td>1.09</td>
<td>0.49</td>
<td></td>
<td></td>
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<tr>
<td>Q7</td>
<td>Implements long terms plans based on company capabilities</td>
<td>3.37</td>
<td>1.00</td>
<td>0.42</td>
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<td></td>
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<tr>
<td>Q8</td>
<td>Analyses operational performance for process improvement</td>
<td>3.11</td>
<td>1.21</td>
<td>0.77</td>
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<tr>
<td>TQ7</td>
<td><strong>Teamwork Structures for Improvement (First Order)</strong></td>
<td>3.3</td>
<td>1.07</td>
<td>0.74</td>
<td>0.71</td>
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<tr>
<td>T1</td>
<td>Uses non-hierarchical organizational structures</td>
<td>3.23</td>
<td>1.26</td>
<td>0.59</td>
<td></td>
<td></td>
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<tr>
<td>T2</td>
<td>Organizes work according to key process which reflect customer needs</td>
<td>3.37</td>
<td>1.13</td>
<td>0.59</td>
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<tr>
<td>TQ8</td>
<td><strong>Operational Quality Planning (First Order)</strong></td>
<td>3.5</td>
<td>0.93</td>
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<tr>
<td>O1</td>
<td>Implements short-term plans based on customer needs</td>
<td>3.54</td>
<td>1.09</td>
<td>0.79</td>
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<tr>
<td>O2</td>
<td>Implements short-term plans based on company capabilities</td>
<td>3.74</td>
<td>1.04</td>
<td>0.70</td>
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<tr>
<td>O3</td>
<td>Set quality goals, measurable and time-based in short term plans</td>
<td>3.23</td>
<td>1.20</td>
<td>0.45</td>
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</table>

**Table 4.1 Results of Questionnaire Pretest for Total Quality Orientation Construct (Cont’d)**
<table>
<thead>
<tr>
<th>Item Code</th>
<th>Item</th>
<th>Mean</th>
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<th>Cronbach’s alpha First Order</th>
<th>Item-total Correlation Second Order</th>
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<tr>
<td>TQ9</td>
<td>Quality Improvement Measurement Systems (First Order)</td>
<td>3.70</td>
<td>0.87</td>
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<tr>
<td>M1</td>
<td>Evaluates and improves products/services</td>
<td>3.91</td>
<td>0.83</td>
<td>0.81</td>
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<tr>
<td>M2</td>
<td>Evaluates and improves processes</td>
<td>3.74</td>
<td>0.90</td>
<td>0.82</td>
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<tr>
<td>M3</td>
<td>Manages data/information to support quality improvement</td>
<td>3.47</td>
<td>1.11</td>
<td>0.90</td>
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<tr>
<td>M4</td>
<td>Employ procedures to ensure access to data/information</td>
<td>3.64</td>
<td>1.10</td>
<td>0.73</td>
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<tr>
<td>TQ10</td>
<td>Corporate Quality Culture (First Order)</td>
<td>3.01</td>
<td>1.01</td>
<td>0.70</td>
<td>0.84</td>
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<tr>
<td>W1</td>
<td>Set quality goals, measurable and time-based in long term plans</td>
<td>2.94</td>
<td>1.11</td>
<td>0.54</td>
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<tr>
<td>W2</td>
<td>Encourages company-wide quality culture</td>
<td>3.09</td>
<td>1.20</td>
<td>0.54</td>
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Table 4.1 Results of Questionnaire Pretest for Total Quality Orientation Construct (Cont’d)

<table>
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<tr>
<th>Item Code</th>
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<tr>
<td>MO</td>
<td>Market Orientation (Second Order)</td>
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<td>0.62</td>
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<td></td>
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<tr>
<td>MO1</td>
<td>Market Intelligence Generation (First Order)</td>
<td>3.46</td>
<td>0.73</td>
<td>0.68</td>
<td>0.66</td>
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<tr>
<td>G1</td>
<td>Meets customers at least once a year to find their future needs</td>
<td>3.91</td>
<td>0.99</td>
<td>0.42</td>
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<tr>
<td>G2</td>
<td>Conducts all related market research</td>
<td>3.57</td>
<td>0.95</td>
<td>0.43</td>
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<tr>
<td>G3</td>
<td>Slow to detect changes in customers’ preference (R)</td>
<td>3.23</td>
<td>1.44</td>
<td>0.37</td>
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<tr>
<td>G4</td>
<td>Polls customers at least once a year to assess quality of products/services</td>
<td>3.51</td>
<td>1.17</td>
<td>0.34</td>
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<tr>
<td>G5</td>
<td>Slow to detect fundamental shift in industry (R)</td>
<td>2.86</td>
<td>1.50</td>
<td>0.56</td>
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<tr>
<td>G6</td>
<td>Reviews likely effect of changes in business environment on customers</td>
<td>3.69</td>
<td>0.80</td>
<td>0.45</td>
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<tr>
<td>MO2</td>
<td>Market Intelligence Dissemination (First Order)</td>
<td>3.26</td>
<td>0.82</td>
<td>0.76</td>
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<tr>
<td>D1</td>
<td>Holds interdepartmental meetings at least once a quarter</td>
<td>3.62</td>
<td>1.21</td>
<td>0.66</td>
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Table 4.2 Results of Questionnaire Pretest for Market Orientation Construct

Note: Items with (R) were reversed coded
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<th>Item Code</th>
<th>Item</th>
<th>Mean</th>
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<th>Cronbach’s alpha First Order</th>
<th>Item-total Correlation Second Order</th>
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<tbody>
<tr>
<td>D2</td>
<td>Marketing personnel discusses with other functional departments</td>
<td>3.24</td>
<td>1.05</td>
<td>0.61</td>
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<tr>
<td>D3</td>
<td>Whole company know something happen to major customers with a short period</td>
<td>3.32</td>
<td>1.27</td>
<td>0.56</td>
<td></td>
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</tr>
<tr>
<td>D4</td>
<td>Disseminates data on customer satisfaction at all levels</td>
<td>2.85</td>
<td>1.16</td>
<td>0.64</td>
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<td></td>
</tr>
<tr>
<td>D5</td>
<td>Slow to alert other department when something important to the market is found (R)</td>
<td>3.24</td>
<td>1.16</td>
<td>0.20</td>
<td></td>
<td></td>
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<tr>
<td>MO3</td>
<td><strong>Responsiveness to Market Intelligence (First Order)</strong></td>
<td>3.39</td>
<td>0.74</td>
<td><strong>0.78</strong></td>
<td><strong>0.72</strong></td>
<td></td>
</tr>
<tr>
<td>R1</td>
<td>Takes long time to respond to competitors’ price changes (R)</td>
<td>3.24</td>
<td>1.42</td>
<td>0.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>Ignores changes in customer’s product/service needs (R)</td>
<td>3.18</td>
<td>1.55</td>
<td>0.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R3</td>
<td>Reviews periodically product/service development efforts</td>
<td>3.50</td>
<td>1.05</td>
<td>0.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R4</td>
<td>Several department get together periodically to plan response to changes in business environment</td>
<td>3.62</td>
<td>0.95</td>
<td>0.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R5</td>
<td>Implements a response to competitors immediately</td>
<td>3.18</td>
<td>1.06</td>
<td>0.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R6</td>
<td>Activities of different departments are well coordinated</td>
<td>3.41</td>
<td>1.08</td>
<td>0.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R7</td>
<td>Takes no action on customer’s complaints (R)</td>
<td>3.24</td>
<td>1.78</td>
<td>0.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R8</td>
<td>Unable to implement a good marketing plan in a timely fashion (R)</td>
<td>3.32</td>
<td>1.18</td>
<td>0.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R9</td>
<td>Make concerted effort to modify a product/service</td>
<td>3.91</td>
<td>0.83</td>
<td>0.55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 4.2 Results of Questionnaire Pretest for Market Orientation Construct (Cont’d)**

*Note: Items with (R) were reversed coded*
<table>
<thead>
<tr>
<th>Item Code</th>
<th>Item</th>
<th>Mean</th>
<th>S.D.</th>
<th>Item-total Correlation First Order</th>
<th>Cronbach’s alpha First Order</th>
<th>Item-total Correlation Second Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP</td>
<td>Organizational Performance (Second Order)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K1</td>
<td>Improves in equity to employees</td>
<td>3.6</td>
<td>1.01</td>
<td>0.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K2</td>
<td>Improves in training functions provided to employees</td>
<td>3.7</td>
<td>0.86</td>
<td>0.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K3</td>
<td>Improves in employee job satisfaction</td>
<td>2.9</td>
<td>1.03</td>
<td>0.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K4</td>
<td>Improves in employee job security</td>
<td>3.03</td>
<td>1.18</td>
<td>0.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K5</td>
<td>Improves in environmental factors affecting the job</td>
<td>3.34</td>
<td>1.14</td>
<td>0.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OP1</td>
<td>Motivation Performance (First Order)</td>
<td>3.33</td>
<td>0.85</td>
<td>0.87</td>
<td>0.62</td>
<td></td>
</tr>
<tr>
<td>OP2</td>
<td>Market Performance (First Order)</td>
<td>3.75</td>
<td>0.79</td>
<td>0.80</td>
<td>0.64</td>
<td></td>
</tr>
<tr>
<td>N1</td>
<td>Improves in success rate of new or modified products</td>
<td>3.65</td>
<td>0.81</td>
<td>0.66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N2</td>
<td>Improves in competitiveness in price</td>
<td>3.76</td>
<td>1.13</td>
<td>0.57</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N3</td>
<td>Improves in ability to satisfy customer needs</td>
<td>3.86</td>
<td>0.86</td>
<td>0.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OP3</td>
<td>Productivity Performance (First Order)</td>
<td>3.57</td>
<td>0.75</td>
<td>0.84</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>Y1</td>
<td>Improves in efficiency of materials usage</td>
<td>3.63</td>
<td>0.84</td>
<td>0.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y2</td>
<td>Improves in efficiency of labor</td>
<td>3.66</td>
<td>0.84</td>
<td>0.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y3</td>
<td>Improves in capital utilization</td>
<td>3.43</td>
<td>0.85</td>
<td>0.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OP4</td>
<td>Societal Performance (First Order)</td>
<td>3.59</td>
<td>0.68</td>
<td>0.60</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>L1</td>
<td>Improves in level of consumer rights</td>
<td>3.57</td>
<td>0.85</td>
<td>0.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td>Improves in recognition of environmental protection</td>
<td>3.49</td>
<td>1.15</td>
<td>0.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L3</td>
<td>Improves in expansion of product/market</td>
<td>3.71</td>
<td>1.07</td>
<td>0.68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L4</td>
<td>Improves in provision of employment opportunity</td>
<td>3.57</td>
<td>0.98</td>
<td>0.41</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.3 Results of Questionnaire Pretest for Organizational Performance Construct

<table>
<thead>
<tr>
<th></th>
<th>TQM</th>
<th>MARKOR</th>
<th>PERFORM</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQM</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MARKOR</td>
<td>0.57</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PERFORM</td>
<td>0.70</td>
<td>0.39</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.4 Results of Questionnaire Pretest for Correlation Analysis of the Three Second Order Constructs
4.9 Summary

This chapter has discussed the rationale behind the research design as consisting of quantitative and qualitative phases for the research issues identified. It has also operationalized the key constructs and their underlying variables in the study: ten dimensions of total quality orientation, three dimensions of market orientation and four dimensions of organizational performance. A large sample cross-sectional survey in the quantitative phase for organizations with quality management system in place was described. A case study approach in the qualitative phase was outlined. Validity and reliability issues in both phases of the study were addressed. The methods of data collection and analysis for both the quantitative and qualitative research were presented. Finally, results of the panel review and the questionnaire pretest provided evidence of validity and reliability of the instrument for the quantitative research in the pretest stage. The next chapter presents the findings of the quantitative research.
Chapter 5 -- Data Analysis - Quantitative Research

5.1 Introduction

This chapter presents the results of the large sample cross-sectional mail survey conducted with organizations having an operational quality management system. The findings are based on the three hundred and four completed survey responses. This chapter compares the profile of organizations responding to the survey research in section 5.2 with respect to their industry types, organization size, turnover, and quality age. Section 5.3 presents results of the test of non-response bias. Results of the test of normality of the data collected are given in section 5.4. Section 5.5 presents results in the estimation of measurement models. Section 5.6 provides results in the estimation of structural model and the test of hypotheses. Section 5.7 provides a general picture of total quality orientation, market orientation and organizational performance among companies in Hong Kong. Section 5.8 classifies organizations responding to the survey research into high and low performers to facilitate identification of target respondents for the qualitative research in the second phase of the study. The last section gives a summary of the chapter.

5.2 Data Analysis

5.2.1 Descriptive Statistics

After pretesting and amending, the survey questionnaire together with a covering letter and a postage-paid reply envelope were mailed in February 1998. The survey questionnaire was mailed to 1,092 business units/organizations with a quality management system (e.g. ISO 9000 series) in place as identified from the list published by HKTDC and HKQAA. The sampling frame also included the HKMA's quality management award winners and finalists as described previously in Chapter four.
The two round questionnaire mailing yielded 347 questionnaire returns, for an overall response rate of 31.8%. 61% (N=212) responded to the first mailing, 39% (N=135) responded to the second mailing. Of the 347 returned questionnaires, two responses were incomplete, two were returned blank, twenty-three questionnaires were returned as undeliverable as these firms (N=7) were no longer in operation or their address have changed (N=16). Twelve requested not to participate and five questionnaires were received too late for inclusion in the analysis. As missing data have an effect on the available sample size. The two incomplete questionnaires were not included for data analysis because of excessive missing data. This left 304 questionnaires, which represented a usable response rate of 27.8%. This response rate was considered acceptable for a survey of this type and the sample size exceeded the guideline for sample size (150 or more) set forth previously. When answers to single items were missing, the average score for the construct concerned was supplied as the score of the missing items. Because of the level of completeness of the responses, pairwise deletion was used in this study. The types of business unit/organization responded to the study and their characteristics are displayed in Table 5.1.

Of the 304 responses, 69 were manufacturing firms, 107 were service firms, 114 were construction companies, and 14 were public utility organizations. Over 70% of the respondents have a quality management system in their organizations for 3 years or above and over 80% of the respondents have an annual turnover of 1 million or above. When they were asked to describe their quality management systems, 8% of the respondents described their quality management systems as quality control, 59% described their systems as quality assurance. Only 24% of the respondents described their quality management systems as TQM, and 9% of the respondents described their quality management systems variously as ISO system, quality improvement system, company-wide quality control program and so on. In response to the question about the number of years quality management systems have been in operation in their organizations, the most prevalent answers were 1-2 years (26.3%) and 3-4 years (33.2%), with 191 respondents gave either of these answers accounting for nearly 60% of the respondents.
<table>
<thead>
<tr>
<th>Frequencies (Percentage)</th>
<th>Manufacturing</th>
<th>Service</th>
<th>Construction</th>
<th>Public Utility</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 100</td>
<td>10 (14.5%)</td>
<td>52 (48.6%)</td>
<td>38 (33.3%)</td>
<td>1 (7.1%)</td>
<td>101 (33.2%)</td>
</tr>
<tr>
<td>100-999</td>
<td>28 (40.6%)</td>
<td>35 (32.7%)</td>
<td>54 (47.4%)</td>
<td>3 (21.4%)</td>
<td>120 (39.5%)</td>
</tr>
<tr>
<td>1,000-4,999</td>
<td>24 (34.8%)</td>
<td>8 (7.5%)</td>
<td>18 (15.8%)</td>
<td>7 (50%)</td>
<td>57 (18.8%)</td>
</tr>
<tr>
<td>5,000 or above</td>
<td>6 (8.7%)</td>
<td>10 (9.3%)</td>
<td>3 (2.6%)</td>
<td>3 (21.4%)</td>
<td>22 (7.2%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>1 (1.4%)</td>
<td>2 (1.9%)</td>
<td>1 (0.9%)</td>
<td>--</td>
<td>4 (1.3%)</td>
</tr>
<tr>
<td>Level of Turnover (HKD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 1 million</td>
<td>1 (1.4%)</td>
<td>6 (5.6%)</td>
<td>--</td>
<td>--</td>
<td>7 (2.3%)</td>
</tr>
<tr>
<td>1-10 million</td>
<td>10 (14.5%)</td>
<td>20 (18.7%)</td>
<td>13 (11.4%)</td>
<td>--</td>
<td>43 (14.1%)</td>
</tr>
<tr>
<td>10-100 million</td>
<td>19 (27.5%)</td>
<td>27 (25.2%)</td>
<td>35 (30.7%)</td>
<td>3 (21.4%)</td>
<td>84 (27.9%)</td>
</tr>
<tr>
<td>Over 100 million</td>
<td>33 (47.8%)</td>
<td>34 (31.8%)</td>
<td>58 (50.9%)</td>
<td>9 (64.3%)</td>
<td>134 (44.1%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>6 (8.7%)</td>
<td>20 (18.7%)</td>
<td>8 (7%)</td>
<td>2 (14.3%)</td>
<td>36 (11.8%)</td>
</tr>
<tr>
<td>Length of Quality Management Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 2 years</td>
<td>7 (10.1%)</td>
<td>38 (35.4%)</td>
<td>33 (29%)</td>
<td>2 (14.3%)</td>
<td>80 (26.3%)</td>
</tr>
<tr>
<td>3 - 4 years</td>
<td>22 (31.9%)</td>
<td>35 (32.7%)</td>
<td>41 (35.9%)</td>
<td>3 (21.4%)</td>
<td>101 (33.2%)</td>
</tr>
<tr>
<td>5 - 6 years</td>
<td>17 (24.6%)</td>
<td>17 (15.9%)</td>
<td>21 (18.4%)</td>
<td>6 (42.9%)</td>
<td>61 (20.1%)</td>
</tr>
<tr>
<td>7 - 8 years</td>
<td>11 (15.9%)</td>
<td>7 (6.5%)</td>
<td>14 (12.3%)</td>
<td>2 (14.3%)</td>
<td>34 (11.2%)</td>
</tr>
<tr>
<td>9 years or above</td>
<td>7 (10%)</td>
<td>6 (5.5%)</td>
<td>2 (1.8%)</td>
<td>1 (7.1%)</td>
<td>16 (5.3%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>5 (7.2%)</td>
<td>4 (3.7%)</td>
<td>3 (2.6%)</td>
<td>--</td>
<td>12 (3.9%)</td>
</tr>
<tr>
<td>Description of Quality Management System</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality control</td>
<td>4 (5.8%)</td>
<td>8 (7.5%)</td>
<td>11 (9.6%)</td>
<td>--</td>
<td>23 (7.6%)</td>
</tr>
<tr>
<td>Quality assurance</td>
<td>36 (52.2%)</td>
<td>59 (55.1%)</td>
<td>77 (67.5%)</td>
<td>7 (50%)</td>
<td>179 (58.9%)</td>
</tr>
<tr>
<td>TQM</td>
<td>26 (37.7%)</td>
<td>26 (24.3%)</td>
<td>13 (11.4%)</td>
<td>7 (50%)</td>
<td>72 (23.7%)</td>
</tr>
<tr>
<td>Others</td>
<td>2 (2.9%)</td>
<td>13 (12.1%)</td>
<td>13 (11.4%)</td>
<td>--</td>
<td>28 (9.2%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>1 (1.4%)</td>
<td>1 (0.9%)</td>
<td>--</td>
<td>--</td>
<td>2 (0.7%)</td>
</tr>
<tr>
<td>Description of Business Orientations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td>23 (33.3%)</td>
<td>13 (12.1%)</td>
<td>62 (54.4%)</td>
<td>2 (14.3%)</td>
<td>100 (32.9%)</td>
</tr>
<tr>
<td>Sales</td>
<td>9 (13%)</td>
<td>25 (23.4%)</td>
<td>8 (7.0%)</td>
<td>--</td>
<td>42 (13.8%)</td>
</tr>
<tr>
<td>Market</td>
<td>30 (43.5%)</td>
<td>38 (35.5%)</td>
<td>24 (21.1%)</td>
<td>8 (57.1%)</td>
<td>100 (32.9%)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (4.3%)</td>
<td>25 (23.4%)</td>
<td>18 (15.8%)</td>
<td>3 (21.4%)</td>
<td>49 (16.1%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>4 (5.8%)</td>
<td>6 (5.6%)</td>
<td>2 (1.8%)</td>
<td>1 (7.1%)</td>
<td>13 (4.3%)</td>
</tr>
<tr>
<td>Total No. of Firms</td>
<td>69 (22.7%)</td>
<td>107 (35.2%)</td>
<td>114 (37.5%)</td>
<td>14 (4.6%)</td>
<td>304 (100%)</td>
</tr>
</tbody>
</table>

Table 5.1 Profile of Organizations Responding to the Survey Research
In a single item question asking the respondents the extent to which formal quality management system is implemented in their organizations with the scale where one represent “not at all” and five representing “to a great extent”. 56.9% of the respondents picked 5, followed by 27.6% picking 4 and 10.2% picking 3. Only 2.6% and 1.6% of the respondents picked the point scale of one and two respectively as the implementation level of formal quality program in their organizations. In addition, 33% of the respondents described their business orientation as production orientation and most of them are manufacturing and construction firms. 14% of the respondents described themselves as sales-oriented and 33% described themselves as market-oriented. In addition, 16% of the respondents gave other answers and characterized themselves variously as service-oriented, design-oriented, consultancy-oriented and so forth.

5.3 Test of Non-response bias

In mail survey, nonresponse bias is a typical problem that can contaminate the reliability of empirical findings. A test of non-response bias should be conducted whenever a survey yields less than a 100% response rate (Hartman, Fuqua and Jenkins 1985). Test of non-response bias was conducted in the study to avoid biased results. Two methods were considered to estimate non-response bias. The first and the most reliable method considered was re-sampling. In this approach, a random sample of non-respondents is surveyed by means of personal or telephone interview in order to assure that data are obtained from nearly 100% of the non-respondent sample. If results for the respondent and non-respondent groups are not significantly different, it may be concluded that non-response bias does not exist. If significant differences are found between the two groups, then the obtained results for respondents must undergo correction (Hartman et al 1985).

The second method and the more economical method considered for estimating non-response bias was extrapolation. Armstrong and Overton (1977) suggested that the extrapolation method, which compares the responses of the “early” respondents with those of the “late” respondents, can be used as an alternative procedure to assess nonresponse bias in mail surveys. This method was employed as a check to assess non-response bias in the data set of the study. The extrapolation method assumes that
the "late" or last respondents in a sample are similar to the "theoretical" non-
respondents. Thus, significant differences in means between early and late
respondents may indicate the presence of underlying differences between respondents
and non-respondents and might suggest the presence of potential non-response bias.

In the study, the responses from the mail survey were ordered sequentially by data
received, with the respondents in the first mailing selected to represent the "early"
respondents and the respondents in the second mailing to represent the "late" or "non"
respondents. T-test was used to determine if there were significant differences in the
mean score of total quality orientation, market orientation and organizational
performance between respondents in the first and the second mailing. An assessment
of non-response bias (Armstrong and Overton 1977) showed no significant
differences between early and late, or proxy, non-respondents at the 0.05 level on the
mean score of total quality orientation scale (t = -0.32, p > 0.05) and the mean score
of market orientation scale (t = -0.24, p > 0.05). In addition, there was not a
significant difference between "early" and "late" respondents in the level of
organizational performance achieved (t = -0.36, p > 0.05). The results indicated that
there appears to be no significant difference in the degree of total quality orientation,
market orientation and organizational performance between the respondents and the
"theoretical" non-respondents, suggesting that non-response is not a problem in the
study.

5.4 Test of Normality of the Data

Maximum-likelihood (ML) estimation was the major tool used for model testing in
the study. The tool is to be used with multivariate normal distributions. This
estimation method should not be used for extremely non-normal data, especially data
with kurtosis. The maximum likelihood estimation method depends on the sample
covariance matrix, and the sample covariance matrix is a poor estimate for
distributions with high kurtosis (Bollen 1989). The chi-square statistic in maximum
likelihood estimation is very sensitive to departure from multivariate normality of the
observed variables.
Before data analysis in structural equation modeling, the data collected was examined for non-normality and for outliers. To test for the potentiality that the data may have a non-normal distribution, checks for skewness, kurtosis and outliers were conducted. PRELIS 2, the preprocessor of LISREL 8, which is helpful for exploratory data screening and for testing the univariate and multivariate normality of the observed variables (Jöreskog and Sörbom 1996) was used. If the problem of non-normality was found, actions would be taken to correct problems with non-normality by finding and removing outliers. An assessment of the approximate normality of the data is important because model estimation and testing are usually based on the validity of this assumption, and lack of normality adversely affects goodness-of-fit indices and standard errors.

The skewness and kurtosis of the seventy-four observed variables (questionnaire items) were computed to test for conditions of high non-normality. The skewness values for the items in the total quality orientation construct were in the range of -1.026 to -0.023, while the kurtosis values were in the range of -1.04 to 1.38. The skewness values for the items in the market orientation construct ranged from -0.819 to -0.0858 except for one value that fell outside that range. That value was -2.125. The kurtosis values of the items in the market orientation construct ranged from -0.812 to 0.296 except for one value that was 4.548. Only one kurtosis and one skewness values were found to exceed an absolute value of 2.0 among items in the market orientation construct. Both of the extreme values were on the same variable: R7, which belongs to the responsiveness to market intelligence component of the market orientation construct. The wording of this item is: Our company takes no action on customer’s complaints. Most of the respondents (205 out of 304) gave a score of 5 to this item. Lastly, the skewness and the kurtosis values of the organizational performance construct were in the range of -0.468 to 0.025, and -0.416 to 0.121 respectively, none of them exceeded the absolute value of two.

Since only one observed variable (out of the 74 observed variables) for skewness and kurtosis was extreme, the data set was not considered to be serious departures from normality and the possibility of problems with a non-normal distribution did not appear to be significant. The data set was considered appropriate for further analyses.
5.5 Measurement Model Development: Traditional Measures and Confirmatory Factor Analysis

In addition to the traditional measures of scale (e.g. Cronbach’s alpha), the three piecewise measurement models were further assessed with confirmatory factor analysis using LISREL 8. Descriptions and results of each of the models (both the measurement models and the structural model) are presented in both figure and tabular forms. The figures include the path loadings of the first order constructs on the second order constructs. However, figures illustrating the specific questionnaire items along with the first order constructs they are proposed to be measuring are not included. The tables provide the results of the confirmatory factor analysis including factor (lambda) loadings, standard errors for the lambda loadings, their associated t-values, measurement errors for the items (deltas), correlations between factors (first order constructs) with their standard errors and t-values, and model fit statistics (e.g. chi-square, GFI, CFI, NFI, RMR). Cronbach’s alpha for the assessment of reliability for each construct and results of the item-total correlation analysis (at both the first and second order level) are also reported.

In accordance with Anderson and Gerbing’s (1988) two-step approach, the measurement models were developed and evaluated apart from the complete overall measurement (structural) model. First, each of the three measurement models of the study were estimated separately using confirmatory factor analysis to assess internal consistency for each set of items. Factors (first order construct) were allowed to correlate freely in the three separate measurement models at the first order level. Indicator variables (questionnaire items) having low loadings with their specified a prior latent construct were considered for elimination if they tapped no additional domain of interest to the constructs they intend to measure. Next, the indicator variables were formed into composite scores to represent their corresponding first order constructs to estimate the measurement models at the second order level, and then the overall measurement (structural) model.
5.5.1 Traditional Measures

Prior to the confirmatory factor analysis at the first order level, traditional analyses for construct measures were carried out and the parameter fit results are presented in Tables 5.2 and 5.3. The intent was to judge the model fit on multiple criteria, not only by the maximum likelihood estimation using LISREL 8 and its related fit coefficients, though confirmatory factor analysis was the primary method used in the study to assess the adequacy of the measurement models. In this sub-section, the traditional analysis results are presented. Results of the LISREL's maximum likelihood estimation and its related fit coefficients are presented in the next two sub-sections.

The dimensionality of the indicator variables were assessed by the following procedures. First, all the seventy-four raw questionnaire items (indicator variables) were subject to reliability test in the seventeen predetermined, a priori factors, ten for total quality orientation, three for market orientation and four for organizational performance. Second, each first order construct that was measured with multiple items was subjected to a further development and purification procedure. The questionnaire items composing each of the ten elements of total quality orientation, three elements of market orientation and four elements of organizational performance were subjected to item-total correlation analysis procedures to identify a unidimensionality scale for each set of items (Churchill 1979). On the basis of reliability test and item-total correlation analysis, together with the subsequent confirmatory factor analysis using LISREL, ill-fitting items, if any, were dropped prior to the estimation of the measurement models at the second order level and the structural model. Upon confirmation of construct validity of the first order factors, the multi-item factors at the first order level were then formed into composite scores to represent the first order constructs by averaging the item responses. As shown in Table 5.2, all the first order factors had alphas ranging from 0.67 to 0.87, indicating high levels of reliability.

The two first order factors of total quality orientation construct, though having relatively low alphas, with the alpha value of 0.67 and 0.69 respectively, were accepted as reliable because of the small number of items in the scales (two items for
each scale in both the first order factors). In all the scales in the market orientation and the organizational performance constructs, all the first order factors demonstrated high level of reliability with the lowest alpha values of 0.82 and 0.74 in the market orientation construct and the organizational performance construct respectively. The alpha values for all the first order factors of these two constructs exceeded the cut-off level of 0.70 set by Nunnally and Bernstein (1994). In addition, all the items appeared to significantly load on the prespecified seventeen first order factors of the three second order constructs in item-total correlation analysis. The loadings ranged from 0.45 to 0.80 for the total quality orientation construct, 0.42 to 0.69 for the market orientation construct, and from 0.49 to 0.83 for the organizational performance construct. In summary, all the construct and reliability estimates for the seventeen multi-item first order factors were considered uniformly high and reliable.

Table 5.2 provides information on how the three research constructs at the first order level were measured and gives a more detailed analysis of the individual indicator variables including measures of the contribution of individual items to the factors, i.e. item-total correlation, and measures of reliability for the first order factors, i.e. Cronbach’s alphas.

Table 5.3 presents the results of the first order factors and gives the means, standard deviations and item-total correlations for each of the factors to their corresponding second order construct. Comparison of the questionnaire pretest results with the results of the survey research is also displayed in Table 5.3. The first order factors displayed in Table 5.3 were formulated by taking the mean values of their individual indicator variables. As measurement models in the study were evaluated by model fitting through maximum likelihood estimation which assumes normal distribution of the data collected, the value of means and standard deviations for each construct at both the first and the second order level presented in Table 5.3 provide further examination of skewness and kurtosis of the data. The item-total correlation analysis shown in Table 5.3 was used to gauge the strength of relationships of the first order constructs to the second order constructs they are measuring and Cronbach’s alpha was used to evaluate the reliability of the second order constructs.
<table>
<thead>
<tr>
<th>Item Code</th>
<th>Items</th>
<th>Item-total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQO</td>
<td>Total Quality Orientation Construct</td>
<td></td>
</tr>
<tr>
<td>TQ1</td>
<td>People and Customer Management, alpha = 0.80</td>
<td></td>
</tr>
<tr>
<td>P1</td>
<td>Sets strategic human resource management objectives</td>
<td>0.61</td>
</tr>
<tr>
<td>P2</td>
<td>Monitors effectiveness of quality education and training</td>
<td>0.65</td>
</tr>
<tr>
<td>P3</td>
<td>Uses employee recognition and performance measurement scheme</td>
<td>0.71</td>
</tr>
<tr>
<td>P4</td>
<td>Employs proactive customer relations</td>
<td>0.50</td>
</tr>
<tr>
<td>TQ2</td>
<td>Supplier Partnership, alpha = 0.73</td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>Audits supplier quality</td>
<td>0.54</td>
</tr>
<tr>
<td>S2</td>
<td>Improves quality and responsiveness of suppliers</td>
<td>0.63</td>
</tr>
<tr>
<td>S3</td>
<td>Considers suppliers as associates</td>
<td>0.48</td>
</tr>
<tr>
<td>TQ3</td>
<td>Communication of Improvement Information, alpha = 0.77</td>
<td></td>
</tr>
<tr>
<td>I1</td>
<td>Employs quality costs</td>
<td>0.53</td>
</tr>
<tr>
<td>I2</td>
<td>Assesses needs for quality education and training</td>
<td>0.62</td>
</tr>
<tr>
<td>I3</td>
<td>Benchmarks processes in non-competing organizations</td>
<td>0.62</td>
</tr>
<tr>
<td>I4</td>
<td>Interacts with outside groups for quality improvement</td>
<td>0.56</td>
</tr>
<tr>
<td>TQ4</td>
<td>Customer Satisfaction Orientation, alpha = 0.86</td>
<td></td>
</tr>
<tr>
<td>C1</td>
<td>Promotes trust and confidence in products/services</td>
<td>0.45</td>
</tr>
<tr>
<td>C2</td>
<td>Evaluates competitors with respect to the level of customer satisfaction</td>
<td>0.69</td>
</tr>
<tr>
<td>C3</td>
<td>Evaluates customer satisfaction with internal performance objectives</td>
<td>0.66</td>
</tr>
<tr>
<td>C4</td>
<td>Determines and improves customer satisfaction</td>
<td>0.66</td>
</tr>
<tr>
<td>C5</td>
<td>Benchmarks direct competitors products/services</td>
<td>0.74</td>
</tr>
<tr>
<td>C6</td>
<td>Benchmarks direct competitors processes</td>
<td>0.71</td>
</tr>
<tr>
<td>TQ5</td>
<td>External Interface Management, alpha = 0.78</td>
<td></td>
</tr>
<tr>
<td>E1</td>
<td>Recognizes social responsibilities</td>
<td>0.56</td>
</tr>
<tr>
<td>E2</td>
<td>Determines customer's future requirements</td>
<td>0.69</td>
</tr>
<tr>
<td>E3</td>
<td>Ensures new product development process meet customer requirements</td>
<td>0.59</td>
</tr>
<tr>
<td>TQ6</td>
<td>Strategic Quality Management, alpha = 0.89</td>
<td></td>
</tr>
<tr>
<td>Q1</td>
<td>Links processes to customer and design requirements</td>
<td>0.53</td>
</tr>
<tr>
<td>Q2</td>
<td>Managers take active leadership to reinforce company's quality value</td>
<td>0.77</td>
</tr>
<tr>
<td>Q3</td>
<td>Satisfies intrinsic reward of employees</td>
<td>0.65</td>
</tr>
<tr>
<td>Q4</td>
<td>Satisfies extrinsic reward of employees</td>
<td>0.60</td>
</tr>
<tr>
<td>Q5</td>
<td>Top management commits to quality improvement through involvement</td>
<td>0.75</td>
</tr>
<tr>
<td>Q6</td>
<td>Implements long-terms plans based on customer needs</td>
<td>0.70</td>
</tr>
<tr>
<td>Q7</td>
<td>Implements long terms plans based on company capabilities</td>
<td>0.60</td>
</tr>
<tr>
<td>Q8</td>
<td>Analyses operational performance for process improvement</td>
<td>0.72</td>
</tr>
<tr>
<td>TQ7</td>
<td>Teamwork Structures for Improvement, alpha = 0.67</td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>Uses non-hierarchical organizational structures</td>
<td>0.52</td>
</tr>
<tr>
<td>T2</td>
<td>Organizes work according to key processes which reflect customer needs</td>
<td>0.52</td>
</tr>
<tr>
<td>TQ8</td>
<td>Operational Quality Planning, alpha = 0.77</td>
<td></td>
</tr>
<tr>
<td>O1</td>
<td>Implements short-term plans based on customer needs</td>
<td>0.74</td>
</tr>
<tr>
<td>O2</td>
<td>Implements short-term plans based on company capabilities</td>
<td>0.69</td>
</tr>
<tr>
<td>O3</td>
<td>Sets quality goals, measurable and time based in short term plans</td>
<td>0.43</td>
</tr>
<tr>
<td>TQ9</td>
<td>Quality Improvement Measurement Systems, alpha = 0.88</td>
<td></td>
</tr>
<tr>
<td>M1</td>
<td>Evaluates and improves products/services</td>
<td>0.80</td>
</tr>
<tr>
<td>M2</td>
<td>Evaluates and improves processes</td>
<td>0.77</td>
</tr>
<tr>
<td>M3</td>
<td>Manages data/information to support quality improvement</td>
<td>0.74</td>
</tr>
<tr>
<td>M4</td>
<td>Employs procedures to ensure access to data/information</td>
<td>0.69</td>
</tr>
<tr>
<td>TQ10</td>
<td>Corporate Quality Culture, alpha = 0.69</td>
<td></td>
</tr>
<tr>
<td>W1</td>
<td>Sets quality goals, measurable and time based in long term plans</td>
<td>0.52</td>
</tr>
<tr>
<td>W2</td>
<td>Encourages company wide quality culture</td>
<td>0.52</td>
</tr>
</tbody>
</table>

Table 5.2: Item and Scale Reliability for Items and First Order Factors

Note: Items with (R) were reversed coded
<table>
<thead>
<tr>
<th>MARKOR</th>
<th>Market Orientation Construct</th>
</tr>
</thead>
<tbody>
<tr>
<td>MO1</td>
<td>Market Intelligence Generation, alpha = 0.82</td>
</tr>
<tr>
<td>G1</td>
<td>Meets customers at least once a year to find their future needs</td>
</tr>
<tr>
<td>G2</td>
<td>Conducts all related market research</td>
</tr>
<tr>
<td>G3</td>
<td>Slow to detect changes in customers' preference (R)</td>
</tr>
<tr>
<td>G4</td>
<td>Polls customers at least once a year to assess quality of products/services</td>
</tr>
<tr>
<td>G5</td>
<td>Slow to detect fundamental shift in industry (R)</td>
</tr>
<tr>
<td>G6</td>
<td>Reviews likely effect of changes in business environment on customers</td>
</tr>
<tr>
<td>MO2</td>
<td>Market Intelligence Dissemination, alpha = 0.82</td>
</tr>
<tr>
<td>D1</td>
<td>Holds interdepartmental meeting at least once a quarter</td>
</tr>
<tr>
<td>D2</td>
<td>Marketing personnel discusses with other functional departments</td>
</tr>
<tr>
<td>D3</td>
<td>Whole company knows something happen to major customers with a short period</td>
</tr>
<tr>
<td>D4</td>
<td>Disseminates data on customer satisfaction at all levels</td>
</tr>
<tr>
<td>D5</td>
<td>Slow to alert other departments when something important to the market is found (R)</td>
</tr>
<tr>
<td>MO3</td>
<td>Responsiveness to Market Intelligence, alpha = 0.85</td>
</tr>
<tr>
<td>R1</td>
<td>Takes long time to respond to competitors' price changes (R)</td>
</tr>
<tr>
<td>R2</td>
<td>Ignores changes in customer's product/service needs (R)</td>
</tr>
<tr>
<td>R3</td>
<td>Reviews periodically product/service development efforts</td>
</tr>
<tr>
<td>R4</td>
<td>Several departments get together periodically to plan response to changes in business environment</td>
</tr>
<tr>
<td>R5</td>
<td>Implements a response to competitors immediately</td>
</tr>
<tr>
<td>R6</td>
<td>Activities of different departments are well coordinated</td>
</tr>
<tr>
<td>R7</td>
<td>Takes no action on customer's complaints (R)</td>
</tr>
<tr>
<td>R8</td>
<td>Unable to implement a good marketing plan in a timely fashion (R)</td>
</tr>
<tr>
<td>R9</td>
<td>Makes concerted effort to modify a product/service</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PERFORM</th>
<th>Organizational Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP1</td>
<td>Motivation Performance, alpha = 0.87</td>
</tr>
<tr>
<td>K1</td>
<td>Improves in equity to employees</td>
</tr>
<tr>
<td>K2</td>
<td>Improves in training functions provided to employees</td>
</tr>
<tr>
<td>K3</td>
<td>Improves in employee job satisfaction</td>
</tr>
<tr>
<td>K4</td>
<td>Improves in employee job security</td>
</tr>
<tr>
<td>K5</td>
<td>Improves in environmental factors affecting the job</td>
</tr>
<tr>
<td>OP2</td>
<td>Market Performance, alpha = 0.74</td>
</tr>
<tr>
<td>N1</td>
<td>Improves in success rate of new or modified products</td>
</tr>
<tr>
<td>N2</td>
<td>Improves in competitiveness in price</td>
</tr>
<tr>
<td>N3</td>
<td>Improves in ability to satisfy customer needs</td>
</tr>
<tr>
<td>OP3</td>
<td>Productivity Performance, alpha = 0.89</td>
</tr>
<tr>
<td>Y1</td>
<td>Improves in efficiency of materials usage</td>
</tr>
<tr>
<td>Y2</td>
<td>Improves in efficiency of labor</td>
</tr>
<tr>
<td>Y3</td>
<td>Improves in capital utilization</td>
</tr>
<tr>
<td>OP4</td>
<td>Societal Performance, alpha = 0.78</td>
</tr>
<tr>
<td>L1</td>
<td>Improves in recognition of consumer rights</td>
</tr>
<tr>
<td>L2</td>
<td>Improves in recognition of environmental protection</td>
</tr>
<tr>
<td>L3</td>
<td>Improves in expansion of product/market</td>
</tr>
<tr>
<td>L4</td>
<td>Improves in provision of employment opportunity</td>
</tr>
</tbody>
</table>

Table 5.2 Item and Scale Reliability for Items and First Order Factors (Cont'd)

Note: Items with (R) were reversed coded
As shown in Table 5.3, the ten first order factors of total quality orientation loaded on the second order construct in the item-total correlation analysis with the lowest and highest loadings of 0.63 and 0.88 respectively. Similarly, all the first order factors in the market orientation construct and the organizational performance construct significantly loaded on their corresponding second order constructs. The loadings ranged from 0.72 to 0.76 for the market orientation construct, and from 0.72 to 0.79 for the organizational performance construct. In addition, all the second order constructs had a very high value of alpha, 0.95 for total quality orientation construct, 0.86 for market orientation construct, and 0.89 for organizational performance construct, indicating high level of reliability for the second order constructs.

The preceding traditional measures of scales indicated that the scales used in the study have adequate measurement properties and were appropriate for further analyses. The next section provides further measurement assessment through confirmatory analysis using LISREL 8.

<table>
<thead>
<tr>
<th>Constructs/Factors</th>
<th>Pretest Results</th>
<th></th>
<th></th>
<th>Survey Research Results</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Alpha</td>
<td>Item-total Corr*</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Total Quality Orientation (TQOR)</td>
<td>3.37</td>
<td>0.79</td>
<td>0.95</td>
<td>3.49</td>
<td>0.71</td>
<td>0.95</td>
</tr>
<tr>
<td>TQ1 – People and Customer Management</td>
<td>3.42</td>
<td>0.84</td>
<td>0.77</td>
<td>0.83</td>
<td>3.61</td>
<td>0.80</td>
</tr>
<tr>
<td>TQ2 – Supplier Partnership</td>
<td>3.46</td>
<td>0.97</td>
<td>0.80</td>
<td>0.75</td>
<td>3.64</td>
<td>0.82</td>
</tr>
<tr>
<td>TQ3 – Communication of Improvement</td>
<td>3.09</td>
<td>0.94</td>
<td>0.83</td>
<td>0.85</td>
<td>3.30</td>
<td>0.83</td>
</tr>
<tr>
<td>Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ4 – Customer Satisfaction Orientation</td>
<td>3.44</td>
<td>0.95</td>
<td>0.91</td>
<td>0.79</td>
<td>3.41</td>
<td>0.82</td>
</tr>
<tr>
<td>TQ5 – External Interface Management</td>
<td>3.54</td>
<td>0.95</td>
<td>0.79</td>
<td>0.77</td>
<td>3.64</td>
<td>0.89</td>
</tr>
<tr>
<td>TQ6 – Strategic Quality Management</td>
<td>3.21</td>
<td>0.85</td>
<td>0.84</td>
<td>0.85</td>
<td>3.46</td>
<td>0.80</td>
</tr>
<tr>
<td>TQ7 – Teamwork Structures for Improvement</td>
<td>3.30</td>
<td>1.07</td>
<td>0.74</td>
<td>0.71</td>
<td>3.30</td>
<td>0.97</td>
</tr>
<tr>
<td>TQ8 – Operational Quality Planning</td>
<td>3.50</td>
<td>0.93</td>
<td>0.79</td>
<td>0.71</td>
<td>3.41</td>
<td>0.87</td>
</tr>
<tr>
<td>TQ9 – Quality Improvement Measurement Systems</td>
<td>3.70</td>
<td>0.87</td>
<td>0.91</td>
<td>0.87</td>
<td>3.82</td>
<td>0.80</td>
</tr>
<tr>
<td>TQ10 - Corporate Quality Culture</td>
<td>3.01</td>
<td>1.01</td>
<td>0.69</td>
<td>0.84</td>
<td>3.31</td>
<td>0.98</td>
</tr>
<tr>
<td>Market Orientation (MARKOR)</td>
<td>3.37</td>
<td>0.62</td>
<td>0.75</td>
<td>3.60</td>
<td>0.67</td>
<td>0.86</td>
</tr>
<tr>
<td>MO1 - Market Intelligence Generation</td>
<td>3.46</td>
<td>0.73</td>
<td>0.68</td>
<td>0.66</td>
<td>3.54</td>
<td>0.79</td>
</tr>
<tr>
<td>MO2 - Market Intelligence Dissemination</td>
<td>3.26</td>
<td>0.82</td>
<td>0.76</td>
<td>0.38</td>
<td>3.50</td>
<td>0.83</td>
</tr>
<tr>
<td>MO3 - Responsiveness to Market Intelligence</td>
<td>3.39</td>
<td>0.74</td>
<td>0.78</td>
<td>0.72</td>
<td>3.77</td>
<td>0.65</td>
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<tr>
<td>Organizational Performance (PERFORM)</td>
<td>3.56</td>
<td>0.63</td>
<td>0.83</td>
<td>3.56</td>
<td>0.63</td>
<td>0.89</td>
</tr>
<tr>
<td>OP1 – Motivation Performance</td>
<td>3.33</td>
<td>0.85</td>
<td>0.87</td>
<td>0.62</td>
<td>3.44</td>
<td>0.72</td>
</tr>
<tr>
<td>OP2 – Market Performance</td>
<td>3.75</td>
<td>0.79</td>
<td>0.80</td>
<td>0.64</td>
<td>3.71</td>
<td>0.69</td>
</tr>
<tr>
<td>OP3 – Productivity Performance</td>
<td>3.57</td>
<td>0.75</td>
<td>0.86</td>
<td>0.71</td>
<td>3.52</td>
<td>0.77</td>
</tr>
<tr>
<td>OP4 – Societal Performance</td>
<td>3.59</td>
<td>0.68</td>
<td>0.60</td>
<td>0.69</td>
<td>3.56</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Table 5.3 Means, Standard Deviations, Reliability Test and Item-total Correlation Analysis Results: Comparison between Pretest Results and Survey Research Results
5.5.2 Confirmatory Factor Analysis: First Order Level

In the confirmatory factor analysis, all the seventy-four questionnaire items were forced to load on their specified a priori first order factors of their corresponding constructs, and all the first order factors in their underlying constructs (e.g., total quality orientation, market orientation and organizational performance) were allowed to correlate freely in the three piecewise measurement models when assessing the relationships of the questionnaire items to their corresponding factors at the first order level. The results of confirmatory factor analysis at the first order level are presented in Table 5.4.

Validity of an observed variable as an indicator of a latent variable is the magnitude of the direct structural relation between the observed variable and the latent variable. Validity focuses on whether there is a causal relationship between the observed variable and the latent variable. The validity coefficient, i.e., lambda loading, determines the portion of the explained variance in the observed variable that is attributable to a particular latent variable. The signs and standard errors of the parameter estimates, i.e., lambda loading, deltas, were examined to determine if there were any unreasonable values and other anomalies. The lambda loadings were checked to see if they have the right signs and sizes according to theory and a priori specifications.

The maximum likelihood estimates for the measure parameters of the three piecewise confirmatory factor analysis models (see Figures 5.1 to 5.3) are presented in Table 5.4. Column 1 lists the parameters to be estimated. Column 2 gives the completely standardized estimates (lambda loadings) of the indicator variables on their corresponding latent constructs, which are the effects of a unit change in the latent construct j on the indicator i, holding everything else constant. Column 3 shows the standard errors associated with the estimates. Column 4 shows the t-values for loadings of the indicator variables on the latent constructs, which should be greater than two to be significant. The error variance estimates (deltas), or the amount of measure variances not attributed to the latent constructs, are reported in column 6. A high estimate (lambda loading) and a relatively low error variance (delta) were taken
to indicate that most of the variance in the observed indicator is due to the latent construct.

For most of the indicator variables, i.e. 74 questionnaire items, their lambda loadings were high and their error variances were relatively low. Those with lower lambda loadings and higher error variances, i.e. M4 in the total quality orientation construct, R6 in the market orientation construct, and N2 in the organizational performance construct, were retained because other measures (e.g. Cronbach’s alpha, item-total correlation) suggested retention of the items and that the items capture aspects not reflected in other measures of the same construct.

<table>
<thead>
<tr>
<th>Measure Parameters Estimates</th>
<th>First-Order Loading (λij)</th>
<th>Completely Stidized Estimate (Lambda Loading)</th>
<th>Standard Error</th>
<th>t - value</th>
<th>Error Variance Estimate</th>
<th>Completely Stidized Estimate (Delta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQ1 on P1 λ 1.1 *</td>
<td>0.98</td>
<td>--</td>
<td>--</td>
<td>P1 (0.1)</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>P2 λ 2.1</td>
<td>1.00</td>
<td>0.12</td>
<td>16.2</td>
<td>P2 (0.2)</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>P3 λ 3.1</td>
<td>0.93</td>
<td>0.09</td>
<td>15.3</td>
<td>P3 (0.3)</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>P4 λ 4.1</td>
<td>1.00</td>
<td>0.13</td>
<td>16.2</td>
<td>P4 (0.4)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>TQ2 on S1 λ 5.2 *</td>
<td>0.91</td>
<td>--</td>
<td>--</td>
<td>S1 (0.1)</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>S2 λ 6.2</td>
<td>1.00</td>
<td>0.03</td>
<td>37.7</td>
<td>S2 (0.2)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>S3 λ 7.2</td>
<td>0.99</td>
<td>0.03</td>
<td>36.8</td>
<td>S3 (0.3)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>TQ3 on I1 λ 8.3*</td>
<td>1.00</td>
<td>--</td>
<td>--</td>
<td>I1 (0.1)</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>I2 λ 9.3</td>
<td>1.00</td>
<td>0.00</td>
<td>201.9</td>
<td>I2 (0.2)</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>I3 λ 10.3</td>
<td>0.78</td>
<td>0.05</td>
<td>21.9</td>
<td>I3 (0.3)</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>I4 λ 11.3</td>
<td>0.78</td>
<td>0.05</td>
<td>21.7</td>
<td>I4 (0.4)</td>
<td>0.39</td>
<td></td>
</tr>
<tr>
<td>TQ4 on C1 λ 12.4*</td>
<td>0.91</td>
<td>--</td>
<td>--</td>
<td>C1 (0.1)</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>C2 λ 13.4</td>
<td>0.99</td>
<td>0.02</td>
<td>36.2</td>
<td>C2 (0.2)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>C3 λ 14.4</td>
<td>0.89</td>
<td>0.04</td>
<td>25.7</td>
<td>C3 (0.3)</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>C4 λ 15.4</td>
<td>0.98</td>
<td>0.02</td>
<td>35.3</td>
<td>C4 (0.4)</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>C5 λ 16.4</td>
<td>0.86</td>
<td>0.03</td>
<td>23.5</td>
<td>C5 (0.5)</td>
<td>0.26</td>
<td></td>
</tr>
<tr>
<td>C6 λ 17.4</td>
<td>0.88</td>
<td>0.03</td>
<td>24.4</td>
<td>C6 (0.6)</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>TQ5 on E1 λ 18.5*</td>
<td>0.99</td>
<td>--</td>
<td>--</td>
<td>E1 (0.1)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>E2 λ 19.5</td>
<td>0.99</td>
<td>0.01</td>
<td>109.6</td>
<td>E2 (0.2)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>E3 λ 20.5</td>
<td>1.00</td>
<td>0.01</td>
<td>124.2</td>
<td>E3 (0.3)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>TQ6 on Q1 λ 21.6*</td>
<td>1.00</td>
<td>--</td>
<td>--</td>
<td>Q1 (0.1)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Q2 λ 22.6</td>
<td>0.98</td>
<td>0.01</td>
<td>76.6</td>
<td>Q2 (0.2)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Q3 λ 23.6</td>
<td>0.96</td>
<td>0.06</td>
<td>16.3</td>
<td>Q3 (0.3)</td>
<td>0.53</td>
<td></td>
</tr>
<tr>
<td>Q4 λ 24.6</td>
<td>0.86</td>
<td>0.03</td>
<td>29.4</td>
<td>Q4 (0.4)</td>
<td>0.26</td>
<td></td>
</tr>
<tr>
<td>Q5 λ 25.6</td>
<td>0.99</td>
<td>0.01</td>
<td>136.8</td>
<td>Q5 (0.5)</td>
<td>0.01</td>
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</tr>
<tr>
<td>Q6 λ 26.6</td>
<td>0.98</td>
<td>0.01</td>
<td>90.8</td>
<td>Q6 (0.6)</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Q7 λ 27.6</td>
<td>0.99</td>
<td>0.01</td>
<td>106.9</td>
<td>Q7 (0.7)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Q8 λ 28.6</td>
<td>0.99</td>
<td>0.01</td>
<td>103.4</td>
<td>Q8 (0.8)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>TQ7 on T1 λ 29.7*</td>
<td>0.99</td>
<td>--</td>
<td>--</td>
<td>T1 (0.1)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>T2 λ 30.7</td>
<td>0.99</td>
<td>0.01</td>
<td>89.2</td>
<td>T2 (0.2)</td>
<td>0.02</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.4 Results of Confirmatory Factor Analysis at First Order Level

* The corresponding parameter was set to 1.00 (unstandardized) to fix the scale of measurement

Note: Estimate parameters are statistically significant at t > 2.0
<table>
<thead>
<tr>
<th>Measure Parameters Estimates</th>
<th>Completely Stdzied Estimate (Lambda Loading)</th>
<th>Standard Error</th>
<th>t - value</th>
<th>Error Variance Estimate</th>
<th>Completely Stdzied Estimate (Delta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQ8 on Q1 λ 31.8*</td>
<td>1.00</td>
<td>--</td>
<td>--</td>
<td>O1 (δ1) 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>O2 λ 32.8</td>
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<td>0.01</td>
<td>191.9</td>
<td>O2 (δ2) 0.00</td>
</tr>
<tr>
<td></td>
<td>O3 λ 33.8</td>
<td>1.00</td>
<td>0.01</td>
<td>193.4</td>
<td>O3 (δ3) 0.00</td>
</tr>
<tr>
<td>TQ9 on M1 λ 34.9*</td>
<td>1.00</td>
<td>--</td>
<td>--</td>
<td>M1 (δ1) 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M2 λ 35.9</td>
<td>1.00</td>
<td>0.00</td>
<td>270.8</td>
<td>M2 (δ2) 0.00</td>
</tr>
<tr>
<td></td>
<td>M3 λ 36.9</td>
<td>1.00</td>
<td>0.00</td>
<td>261.1</td>
<td>M3 (δ3) 0.00</td>
</tr>
<tr>
<td></td>
<td>M4 λ 37.9</td>
<td>0.02</td>
<td>0.06</td>
<td>0.29</td>
<td>M4 (δ4) 1.00</td>
</tr>
<tr>
<td>TQ10 on W1 λ 38.10*</td>
<td>1.00</td>
<td>--</td>
<td>--</td>
<td>W1 (δ1) 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>W2 λ 39.10</td>
<td>1.00</td>
<td>0.00</td>
<td>256.4</td>
<td>W2 (δ2) 0.00</td>
</tr>
<tr>
<td>MO1 on G1 λ 1.1*</td>
<td>0.95</td>
<td>--</td>
<td>--</td>
<td>G1 (δ1) 0.09</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G2 λ 2.1</td>
<td>0.96</td>
<td>0.03</td>
<td>40.3</td>
<td>G2 (δ2) 0.08</td>
</tr>
<tr>
<td></td>
<td>G3 λ 3.1</td>
<td>0.79</td>
<td>0.05</td>
<td>21.2</td>
<td>G3 (δ3) 0.04</td>
</tr>
<tr>
<td></td>
<td>G4 λ 4.1</td>
<td>0.90</td>
<td>0.04</td>
<td>30.4</td>
<td>G4 (δ4) 0.02</td>
</tr>
<tr>
<td></td>
<td>G5 λ 5.1</td>
<td>1.00</td>
<td>0.02</td>
<td>60.7</td>
<td>G5 (δ5) 0.02</td>
</tr>
<tr>
<td></td>
<td>G6 λ 6.1</td>
<td>0.95</td>
<td>0.02</td>
<td>39.3</td>
<td>G6 (δ6) 0.09</td>
</tr>
<tr>
<td>MO2 on D1 λ 7.2*</td>
<td>0.77</td>
<td>--</td>
<td>--</td>
<td>D1 (δ1) 0.40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D2 λ 8.2</td>
<td>0.78</td>
<td>0.07</td>
<td>15.1</td>
<td>D2 (δ2) 0.39</td>
</tr>
<tr>
<td></td>
<td>D3 λ 9.2</td>
<td>1.00</td>
<td>0.08</td>
<td>21.1</td>
<td>D3 (δ3) 0.01</td>
</tr>
<tr>
<td></td>
<td>D4 λ 10.2</td>
<td>0.95</td>
<td>0.09</td>
<td>19.8</td>
<td>D4 (δ4) 0.09</td>
</tr>
<tr>
<td></td>
<td>D5 λ 11.2</td>
<td>0.96</td>
<td>0.09</td>
<td>19.8</td>
<td>D5 (δ5) 0.08</td>
</tr>
<tr>
<td>MO3 on R1 λ 12.3*</td>
<td>0.95</td>
<td>--</td>
<td>--</td>
<td>R1 (δ1) 0.09</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R2 λ 13.3</td>
<td>0.99</td>
<td>0.02</td>
<td>49.0</td>
<td>R2 (δ2) 0.02</td>
</tr>
<tr>
<td></td>
<td>R3 λ 14.3</td>
<td>0.95</td>
<td>0.03</td>
<td>37.9</td>
<td>R3 (δ3) 0.10</td>
</tr>
<tr>
<td></td>
<td>R4 λ 15.3</td>
<td>0.99</td>
<td>0.02</td>
<td>51.8</td>
<td>R4 (δ4) 0.01</td>
</tr>
<tr>
<td></td>
<td>R5 λ 16.3</td>
<td>1.00</td>
<td>0.02</td>
<td>53.3</td>
<td>R5 (δ5) 0.01</td>
</tr>
<tr>
<td></td>
<td>R6 λ 17.3</td>
<td>0.05</td>
<td>0.06</td>
<td>0.92</td>
<td>R6 (δ6) 1.00</td>
</tr>
<tr>
<td></td>
<td>R7 λ 18.3</td>
<td>1.00</td>
<td>0.02</td>
<td>54.1</td>
<td>R7 (δ7) 0.00</td>
</tr>
<tr>
<td></td>
<td>R8 λ 19.3</td>
<td>1.00</td>
<td>0.02</td>
<td>54.1</td>
<td>R8 (δ8) 0.00</td>
</tr>
<tr>
<td></td>
<td>R9 λ 20.3</td>
<td>1.00</td>
<td>0.02</td>
<td>53.6</td>
<td>R9 (δ9) 0.00</td>
</tr>
<tr>
<td>OP1 on K1 λ 1.1*</td>
<td>0.98</td>
<td>--</td>
<td>--</td>
<td>K1 (δ1) 0.04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>K2 λ 2.1</td>
<td>0.98</td>
<td>0.02</td>
<td>66.0</td>
<td>K2 (δ2) 0.03</td>
</tr>
<tr>
<td></td>
<td>K3 λ 3.1</td>
<td>1.00</td>
<td>0.01</td>
<td>85.2</td>
<td>K3 (δ3) 0.00</td>
</tr>
<tr>
<td></td>
<td>K4 λ 4.1</td>
<td>0.98</td>
<td>0.02</td>
<td>61.9</td>
<td>K4 (δ4) 0.04</td>
</tr>
<tr>
<td></td>
<td>K5 λ 5.1</td>
<td>1.00</td>
<td>0.01</td>
<td>85.0</td>
<td>K5 (δ5) 0.00</td>
</tr>
<tr>
<td>OP2 on N1 λ 6.2*</td>
<td>1.00</td>
<td>--</td>
<td>--</td>
<td>N1 (δ1) 0.03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N2 λ 7.2</td>
<td>0.12</td>
<td>0.06</td>
<td>2.33</td>
<td>N2 (δ2) 0.98</td>
</tr>
<tr>
<td></td>
<td>N3 λ 8.2</td>
<td>0.85</td>
<td>0.03</td>
<td>29.1</td>
<td>N3 (δ3) 0.27</td>
</tr>
<tr>
<td>OP3 on Y1 λ 9.3*</td>
<td>0.94</td>
<td>--</td>
<td>--</td>
<td>Y1 (δ1) 0.13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Y2 λ 10.3</td>
<td>1.00</td>
<td>0.02</td>
<td>45.8</td>
<td>Y2 (δ2) 0.00</td>
</tr>
<tr>
<td></td>
<td>Y3 λ 11.3</td>
<td>1.00</td>
<td>0.02</td>
<td>44.7</td>
<td>Y3 (δ3) 0.01</td>
</tr>
<tr>
<td>OP4 on L1 λ 12.4*</td>
<td>1.00</td>
<td>--</td>
<td>--</td>
<td>L1 (δ1) 0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L2 λ 13.4</td>
<td>0.99</td>
<td>0.01</td>
<td>110.4</td>
<td>L2 (δ2) 0.02</td>
</tr>
<tr>
<td></td>
<td>L3 λ 14.4</td>
<td>0.90</td>
<td>0.03</td>
<td>35.0</td>
<td>L3 (δ3) 0.20</td>
</tr>
<tr>
<td></td>
<td>L4 λ 15.4</td>
<td>0.78</td>
<td>0.04</td>
<td>21.8</td>
<td>L4 (δ4) 0.39</td>
</tr>
</tbody>
</table>

Table 5.4 Results of Confirmatory Factor Analysis at First Order Level (Cont'd)

* The corresponding parameter was set to 1.00 (unstandardized) to fix the scale of measurement.

Note: Estimate parameters are statistically significant at $t > 2.0$.
Figure 5.1 Measurement Model of Total Quality Orientation
Figure 5.2 Measurement Model of Market Orientation
Figure 5.3 Measurement Model of Organizational Performance
Consistent with Anderson and Gerbing (1988), all the three measurement models were evaluated on the following criteria: reliability, convergent validity, discriminant validity and unidimensionality. The reliability of the constructs was assured in the previous section with reliability test using Cronbach’s alpha. Convergent validity was assessed for the three piecewise measurement models by determining whether each indicator’s estimated coefficient on its underlying first order factor is significant, that is greater than twice its standard error (Anderson and Gerbing 1988), or the t-value for each estimate is greater than two. Displayed in Table 5.4, all the values of the standard errors associated with the parameter estimates (lambda loadings) were low (the largest value was 0.13), suggesting that these estimates are precise. Except the three items (M4, R6 and N2), the lambda loadings for each of the indicator variables were positive and statistically significant, i.e. all the t-values exceeded 2.0. The lambda loadings for the first order factors ranged from eleven to hundred times their standard errors and that the lambda loadings were significantly large. For instance, all the indicators from the external interface management factor (TQ5) of the total quality orientation construct loaded between 0.99 and 1.00 on that first order factor. In summary, except the three items, all the other items had a significant loading on their corresponding first order factors as the lowest t-value was 15.1, evidence of the convergent validity of the indicator variables was thus provided.

The three insignificant indicator variables M4, R6 and N2 were retained because of the high alpha value and the high item-total correlation coefficient in their first order factors and theoretical support for retention. The low loading of M4, \( \lambda = 0.02, t=0.29, \) and \( \delta=1.0, \) was due to high error estimate of the indicator variable. The item belongs to the quality improvement measurement system dimension (TQ9) of the total quality orientation construct. The item was being retained in the construct because the item that make up the first order factor is the only item that address a firm’s action to ensure access to data and information for quality improvement. One reason for the item to load weakly on the factor of TQ9 could be that the item was not worded correctly. For instance, the wordings of M3 and M4 are similar focusing on the management of data and information for quality improvement. The variation of M4 that was supposed to be explained by the latent factor of TQ9 was captured by M3.
Importantly, the alpha value of the first order factor of TQ9 was high (0.88) despite inclusion of M4 into the factor.

The indicator R6 of low loading was not deleted because of other measures and theoretical support for retention. The loading of R6 was $\lambda=0.05$, $t=0.92$, and $\delta=1.0$. The item belongs to the responsiveness to market intelligence dimension (MO2) of market orientation construct which deals with organizational connectedness and cross-functional coordination. The item was retained because the MARKOR scale including the item has been used in other studies and was found to be reliable (e.g. Kohli et al 1993). Indeed, the alpha value of MO2 was acceptable (0.75) even with the item of R6 in the factor. In addition, the item-total correlation coefficient of the R6 item to the factor of MO2 was acceptable (0.66).

The indicator N2 was also retained despite low lambda loading, $\lambda=0.12$, $t=2.33$ and $\delta=0.98$. The indicator was kept because of its unique nature not capture by other indicator variables measuring market performance of a firm reflected by price competitiveness of the products/services of a firm being offered. Indeed, the loading of N2, though weak, but was significant with t-value greater than two. Further evidence to support retention of the item included the acceptable alpha value in the first order factor (0.74) and the acceptable loading of the item to the first order factor in item-total correlation analysis (0.49). Indeed, the decision to retain the three less "fit" items, M4, R2 and N2, for further analysis was consistent with the position of Anderson and Gerbing (1988) that respecification should be based on more than just statistical results.

The estimated values for the three piecewise measurement models showed that the indicators of the first order constructs form highly significant relationships with their underlying latent constructs as indicated by large t-values greater than two. Although convergent validity was weakly established for M4, R6, and N2, results of the confirmatory factor analysis, along with other measures such as Cronbach's alpha and item-total correlation coefficient for the rest of the items reported in Table 5.4, suggested that there is sufficient internal consistency among the indicator variables of the first order factors to use them in the measurement models.
Discriminant validity was tested with phi estimate, i.e. intercorrelation among first order factors. The phi estimates are shown in Tables 5.5 and 5.6. All phi-values were significant at p<0.01 level. Discriminant validity was not achieved in some cases as some of the first order factors were highly correlated with a perfect correlation coefficient of 1.0. This was expected as the first order factors are the components of the second order factors they are measuring (e.g. TQ1 to TQ10 are measuring total quality orientation). Since they represent the components of a higher order factor and are measuring the same factor, they should be correlated. As shown in Tables 5.5 and 5.6, perfect correlation occurred in some cases between factors in the total quality orientation construct and in the market orientation construct.

To test unidimensionality of the indicator variables in confirmatory factor analysis at the first order level, the three measurement models were tested where every indicator variable was forced to load on its specified a priori factor of their respective constructs. In all the three models, the items loaded significantly on their prespecified factors with none of the measurement error was correlated, providing evidence of unidimensionality of the first order factors.

<table>
<thead>
<tr>
<th>Mean</th>
<th>S.D.</th>
<th>TQ1</th>
<th>TQ2</th>
<th>TQ3</th>
<th>TQ4</th>
<th>TQ5</th>
<th>TQ6</th>
<th>TQ7</th>
<th>TQ8</th>
<th>TQ9</th>
<th>TQ10</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQ1</td>
<td>3.61</td>
<td>0.80</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ2</td>
<td>3.64</td>
<td>0.82</td>
<td>0.70</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ3</td>
<td>3.30</td>
<td>0.83</td>
<td>0.74</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ4</td>
<td>3.41</td>
<td>0.82</td>
<td>0.93</td>
<td>0.93</td>
<td>0.95</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ5</td>
<td>3.64</td>
<td>0.89</td>
<td>0.69</td>
<td>1.00</td>
<td>1.00</td>
<td>0.92</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ6</td>
<td>3.46</td>
<td>0.80</td>
<td>0.69</td>
<td>1.00</td>
<td>1.00</td>
<td>0.92</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ7</td>
<td>3.30</td>
<td>0.97</td>
<td>0.99</td>
<td>0.58</td>
<td>0.62</td>
<td>0.85</td>
<td>0.56</td>
<td>0.57</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ8</td>
<td>3.40</td>
<td>0.87</td>
<td>1.00</td>
<td>0.68</td>
<td>0.71</td>
<td>0.91</td>
<td>0.56</td>
<td>0.67</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>TQ9</td>
<td>3.82</td>
<td>0.80</td>
<td>1.00</td>
<td>0.68</td>
<td>0.71</td>
<td>0.91</td>
<td>0.56</td>
<td>0.67</td>
<td>0.99</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>TQ10</td>
<td>3.30</td>
<td>0.98</td>
<td>1.00</td>
<td>0.71</td>
<td>0.74</td>
<td>0.93</td>
<td>0.69</td>
<td>0.70</td>
<td>0.99</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 5.5 Means, Standard Deviations, and Intercorrelations of First Order Factors of Total Quality Orientation Construct

Note: All correlation coefficient are significant at 0.01 level

<table>
<thead>
<tr>
<th>Mean</th>
<th>S.D.</th>
<th>MO1</th>
<th>MO2</th>
<th>MO3</th>
<th></th>
<th>Mean</th>
<th>S.D.</th>
<th>OP1</th>
<th>OP2</th>
<th>OP3</th>
<th>OP4</th>
</tr>
</thead>
<tbody>
<tr>
<td>MO1</td>
<td>3.54</td>
<td>0.79</td>
<td>1.00</td>
<td></td>
<td>OP1</td>
<td>3.44</td>
<td>0.72</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MO2</td>
<td>3.50</td>
<td>0.83</td>
<td>0.73</td>
<td>1.00</td>
<td>OP2</td>
<td>3.70</td>
<td>0.69</td>
<td>0.97</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MO3</td>
<td>3.77</td>
<td>0.65</td>
<td>0.68</td>
<td>1.00</td>
<td>OP3</td>
<td>3.52</td>
<td>0.77</td>
<td>0.99</td>
<td>0.95</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>OP4</td>
<td>3.56</td>
<td>0.70</td>
<td>0.99</td>
<td>0.93</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 5.6 Means, Standard Deviations, and Intercorrelations of First Order Factors of Market Orientation and Organizational Performance Constructs

Note: All correlation coefficients are significant at 0.01 level
The development of the three piecewise measurement models at the first order level involved a process of making respecification decisions based on statistical considerations in conjunction with theoretical and empirical considerations. The results of the confirmatory factor analysis presented above provided information and measurement properties of both the indicator variables and the latent constructs at the first order level. As the three piecewise models at the first order level were not rejected by the data, i.e. significant loading of the indicator variables on their corresponding latent constructs, model improvement through respecification, for example, combining or dropping items according to statistics and guidelines found in the literature was not required. Table 5.7 provides a summary of the latent constructs and shows the number of indicator variables retained for each construct.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Number of Items</th>
<th>Number Retained</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Quality Orientation Construct (TQOR)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People and Customer Management (TQ1)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Supplier Partnership (TQ2)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Communication of Improvement Information (TQ3)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Customer Satisfaction Orientation (TQ4)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>External Interface Management (TQ5)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Strategic Quality Management (TQ6)</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Teamwork Structures for Improvement (TQ7)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Operational Quality Planning (TQ8)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Quality Improvement Measurement Systems (TQ9)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Corporate Quality Culture (TQ10)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Market Orientation Construct (MARKOR)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Intelligence Generation (MO1)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Market Intelligence Dissemination (MO2)</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Responsiveness to Market Intelligence (MO3)</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td><strong>Organizational Performance Construct (PERFORM)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation Performance (OP1)</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Market Performance (OP2)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Productivity Performance (OP3)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Societal Performance (OP4)</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 5.7 Items Retained for Further Analysis upon Confirmatory Factor Analysis at First Order Level

This sub-section has demonstrated that the indicator variables (questionnaire items) corresponded to the constructs that they are intended to measure. Although it may appear upon close inspection that occasional parameter loadings, i.e. M4, K6, N2, fell below acceptable levels of model criteria (significant loading with t-value greater than
two), this is typical when estimating a large measurement model with multiple indicators on a large data set. In addition, two first order factors (TQ7, TQ10) were marginally below the 0.7 cut-off value for scale reliability set by Nunnally and Bernstein (1994), the two alpha values however were close to the cut-off level with the values of 0.67 and 0.69 respectively. On balance, the indicator variables did appear to be demonstrating validity and reliability sufficient for progressing to the next step of developing composite scores for estimation of the measurement models at the second order level. Thus, in the analysis that follows, the seventy-four retained items were averaged to form into seventeen composite scores for estimation of the measurement models at the second order level and then the structural model.

5.5.3 Confirmatory Factor Analysis: Second Order Level

In the first order confirmatory factor analysis, the three measurement models at the first order level were tested where every indicator variable was restricted to load on its a priori specified first order factor of their corresponding constructs. In all these models, most of the items loaded significantly on their prespecified factors, none of the measurement errors was correlated. This provided evidence of construct unidimensionality.

For the higher (second) order constructs, their underlying factor structures were also tested with confirmatory factor analysis but using composite scores of the first order factors as their indicator variables. In the models that were tested, the observed items or the indicator variables were hypothesized to originate from the first order factors. These first order factors in turn originate from the second order factor models representing total quality orientation, market orientation and organizational performance accordingly. The first order factors were represented by the composite scores in the second order confirmatory factor models.

Specifically, total quality orientation, market orientation and organizational performance were modeled as a second order factor model in LISREL analysis, where the observed (questionnaire) items arise from their first order factors (e.g. TQ1 to TQ10 in the total quality orientation construct). The first order factors themselves arise from their corresponding second order factor. To illustrate, the relationships of
the thirty-nine items of the total quality orientation construct with their first order and
second order constructs in algebraic term is:

\[ y_t = \Lambda (\Gamma \xi + \zeta) + \varepsilon t \]

where: \( y \) is the 39 x 1 vector of questionnaire items.
\( \Lambda \) is the 39 x 10 first order loading matrix.
\( \Gamma \) is 10 x 1 second order loading matrix.
\( \xi \) is the second order factor.
\( \zeta \) is the 10 x 1 vector of first order factors, and
\( \varepsilon \) is the 39 x 1 vector of item residuals.

The ten first order factors of the total quality orientation construct, i.e. TQ1 to TQ10, were viewed as comprising a higher (second) order total quality orientation construct, i.e. TQOR. This corresponds to a second order confirmatory factor model, in which the observed items are hypothesized to originate from the ten first order factors, and the first order factors in turn originate from a second order factor. Confirmatory factor analysis at the second order level using composite scores was performed to examine the measurement models that total quality orientation, market orientation and organizational performance are the second order factors in which the items arise from their first order factors (e.g. ten first order factors for TQOR). In turn, the first order factors stem from a single second order factor (e.g. TQOR).

Similar to the confirmatory factory analysis at the first order level, the first order factors were taken as congeneric items and were used to assess a set of a priori specified relationships with their higher order constructs they intend to measure. The second order models were analyzed as multi-factor constructs. Two types of model parameters were estimated. The parameters were the relationships between the second order constructs and their first order factors represented by lambda, and the amount of error for each first order factor represented by delta. The results of confirmatory factor analysis for the three constructs at the second order level employing seventeen first order factors (represented by composite scores) are presented in Tables 5.8 and 5.9 as are indicated in Figures 5.4 to 5.6.
<table>
<thead>
<tr>
<th>First Order Factor (LISREL Code)</th>
<th>Measure Parameters Estimate</th>
<th>Completely Stdzied Loading (Lambda Loading)</th>
<th>Std Error</th>
<th>t-value</th>
<th>Error Variance Estimate</th>
<th>Completely Stdzied Estimate (Delta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQOR</td>
<td>Total Quality Orientation Alpha = 0.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ1 (λ1.1) *</td>
<td>People and Customer Management</td>
<td>0.84</td>
<td>--</td>
<td>--</td>
<td>TQ1 (δ1)</td>
<td>0.29</td>
</tr>
<tr>
<td>TQ2 (λ2.1)</td>
<td>Supplier Partnership</td>
<td>0.65</td>
<td>0.06</td>
<td>12.7</td>
<td>TQ2 (δ2)</td>
<td>0.58</td>
</tr>
<tr>
<td>TQ3 (λ3.1)</td>
<td>Communication of Improvement Information</td>
<td>0.85</td>
<td>0.05</td>
<td>19.1</td>
<td>TQ3 (δ3)</td>
<td>0.27</td>
</tr>
<tr>
<td>TQ4 (λ4.1)</td>
<td>Customer Satisfaction Orientation</td>
<td>0.84</td>
<td>0.05</td>
<td>18.5</td>
<td>TQ4 (δ4)</td>
<td>0.30</td>
</tr>
<tr>
<td>TQ5 (λ5.1)</td>
<td>External Interface Management</td>
<td>0.83</td>
<td>0.06</td>
<td>18.3</td>
<td>TQ5 (δ5)</td>
<td>0.31</td>
</tr>
<tr>
<td>TQ6 (λ6.1)</td>
<td>Strategic Quality Management</td>
<td>0.91</td>
<td>0.05</td>
<td>21.5</td>
<td>TQ6 (δ6)</td>
<td>0.17</td>
</tr>
<tr>
<td>TQ7 (λ7.1)</td>
<td>Teamwork Structures for Improvement</td>
<td>0.75</td>
<td>0.07</td>
<td>15.6</td>
<td>TQ7 (δ7)</td>
<td>0.44</td>
</tr>
<tr>
<td>TQ8 (λ8.1)</td>
<td>Operational Quality Planning</td>
<td>0.69</td>
<td>0.06</td>
<td>14.0</td>
<td>TQ8 (δ8)</td>
<td>0.52</td>
</tr>
<tr>
<td>TQ9 (λ9.1)</td>
<td>Quality Improvement Measurement Systems</td>
<td>0.86</td>
<td>0.05</td>
<td>19.5</td>
<td>TQ9 (δ9)</td>
<td>0.26</td>
</tr>
<tr>
<td>TQ10 (λ10.1)</td>
<td>Corporate Quality Culture</td>
<td>0.85</td>
<td>0.07</td>
<td>19.0</td>
<td>TQ10 (δ10)</td>
<td>0.28</td>
</tr>
<tr>
<td>MARKOR</td>
<td>Market Orientation alpha = 0.86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MO1 (λ1.1) *</td>
<td>Market Intelligence Generation (MO1)</td>
<td>0.67</td>
<td>--</td>
<td>--</td>
<td>MO1 (δ1)</td>
<td>0.27</td>
</tr>
<tr>
<td>MO2 (λ2.1)</td>
<td>Market Intelligence Dissemination (MO2)</td>
<td>0.69</td>
<td>0.07</td>
<td>15.2</td>
<td>MO2 (δ2)</td>
<td>0.31</td>
</tr>
<tr>
<td>MO3 (λ3.1)</td>
<td>Responsiveness to Market Intelligence (MO3)</td>
<td>0.52</td>
<td>0.05</td>
<td>8.5</td>
<td>MO3 (δ3)</td>
<td>0.36</td>
</tr>
<tr>
<td>PERFORM</td>
<td>Organizational Performance alpha = 0.89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OP1 (λ1.1) *</td>
<td>Motivation Performance (OP1)</td>
<td>0.58</td>
<td>--</td>
<td>--</td>
<td>OP1 (δ1)</td>
<td>0.35</td>
</tr>
<tr>
<td>OP2 (λ2.1)</td>
<td>Market Performance (OP2)</td>
<td>0.59</td>
<td>0.06</td>
<td>16.5</td>
<td>OP2 (δ2)</td>
<td>0.26</td>
</tr>
<tr>
<td>OP3 (λ3.1)</td>
<td>Productivity Performance (OP3)</td>
<td>0.60</td>
<td>0.07</td>
<td>14.4</td>
<td>OP3 (δ3)</td>
<td>0.41</td>
</tr>
<tr>
<td>OP4 (λ4.1)</td>
<td>Societal Performance (OP4)</td>
<td>0.59</td>
<td>0.06</td>
<td>16.1</td>
<td>OP4 (δ4)</td>
<td>0.29</td>
</tr>
</tbody>
</table>

Table 5.8 Results of Confirmatory Factor Analysis at Second Order Level

* The corresponding parameter was set to 1.00 (unstandardized) to fix the scale of measurement
Figure 5.4 Results of Measurement Model of Total Quality Orientation at Second Order Level

Note: t-values in parentheses, coefficients with t-values of 1.96 or greater are significant at $p < .01$ level
Figure 3.5 Results of Measurement Model of Market Orientation at Second Order Level

Note: t-values in parentheses. Coefficients with t-values of 1.96 or greater are significant at p < .01 level
Figure 5.6 Results of Measurement Model of Organizational Performance at Second Order Level

Note: t-values in parentheses. Coefficients with t-values of 1.96 or greater are significant at p < .01 level.
In evaluating construct validity, convergent validity was assessed by determining whether each indicator's estimated path loading on its proposed underlying factor is significant (Anderson and Gerbing 1988). The reliability of the first order factors exhibited by the traditional measures (e.g. Cronbach's alpha) and the positiveness and the significance of the lambda coefficients provided strong evidence of internal consistency. As Table 5.8 shows, the alpha values for all the three second order constructs exceeded the cut-off level of 0.7 set by Nunnally and Bernstein (1994), showing satisfactory evidence of internal consistency with the highest being for the total quality orientation construct (0.95) and the lowest for market orientation construct (0.86).

Furthermore, all the first order factors had large and significant loadings (p<0.01) on their corresponding a priori specified second order factors. Thus these measures displayed adequate convergent validity. The loadings ranged from the lowest of 0.65 to the highest of 0.91 for the total quality orientation construct, and from 0.52 to 0.69 and 0.58 to 0.60 for the constructs of market orientation and organizational performance respectively. In addition, the confidence interval around the correlation estimates between any two constructs did not include 1.0, which indicates evidence of discriminant validity for the second order factors, though the correlation coefficients between second order constructs are high, from 0.83 to 0.92. The means, standard deviations and correlations between second order constructs are shown in Table 5.9.

<table>
<thead>
<tr>
<th></th>
<th>Means</th>
<th>S.D.</th>
<th>TQR</th>
<th>MARKOR</th>
<th>PERFORM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Quality Orientation (TQOR)</strong></td>
<td>3.37</td>
<td>0.79</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Market Orientation (MARKOR)</strong></td>
<td>3.37</td>
<td>0.62</td>
<td>0.83</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td><strong>Organizational Performance (PERFORM)</strong></td>
<td>3.56</td>
<td>0.63</td>
<td>0.92</td>
<td>0.89</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 5.9 Means, Standard Deviations and Intercorrelations between Factors at Second Order Level

Note: All correlation coefficients are significant at P < 0.01 level.
In addition, the goodness-of-fit indices shown in Table 5.10 suggested good match of the model to data for the organizational performance construct ($\chi^2=0.01$, df=2, p=1.0). All the other fit statistics for that construct also exceeded the criteria set previously as acceptance of fit. Those fit statistics included goodness of fit index (GFI) = 1.0, comparative fit index (CFI) = 1.0, normed fit index (NFI) = 1.0, root mean square residual (RMR) = 0.001. Because of model saturation (zero degree of freedom), goodness-fit-measure was not computed for the market orientation construct. Although the overall chi-square statistic for the total quality orientation construct was significant ($\chi^2 = 69.8$, df = 35, p = 0.01), no one fit measure provides an adequate evaluation. Overall model fit was determined by considering several different fit statistics in the study. The small chi-square statistic relative to the degree of freedom and the other goodness-of-fit measures suggested a satisfactory fit to the data for the construct of total quality orientation - goodness of fit index (GFI) = 0.96, comparative fit index (CFI) = 0.99, normed fit index (NFI) = 0.97, root mean square residual (RMR) = 0.017. All the other goodness of fit measures exceeded the guideline set previously (see Chapter four and Appendix K) for model fit and provided support of the model fit. The model was therefore accepted as an adequate representation of the data for the total quality orientation construct.

The hypothesized factor structures, LISREL's parameters estimate and the goodness-of-fit indices shown in Tables 5.8 to 5.10 indicated that the three piecewise measurement models as a whole have satisfactory fit to the data collected. These results led to the acceptance of the three piecewise measurement models as adequate representation of the three constructs of total quality orientation, market orientation and organizational performance.
Table 5.10  Goodness-of-fit Indices for Measurement Models of Total Quality Orientation, Market Orientation and Organizational Performance

5.5.4 Summary of Results in Measurement Models Development

Section 5.4 has presented the measurement development results. A confirmatory factor analysis using LISREL 8 was employed to determine fit of the indicators to the latent (first order) constructs, and the fit between the first order constructs and the second order constructs. Confirmatory factor analysis was performed separately on each of the measurement models and the validity and reliability of the measures were assessed. Analysis of the data suggested retention of all the indicator variables and the first order factors. The items and the composite scores based on a priori constructs showed desirable measurement properties, i.e. significant loadings on their specified a priori construct. Specifically, the measurement models provided good fits to the data collected and they showed evidence of construct validity. All of the latent constructs and the majority of the individual items were found to be valid and reliable. The traditional measures, the LISREL’s parameter estimates, and the goodness-of-fit indices all provided evidence supportive of the measurement properties of the three constructs, suggesting that the measurement relationships are consistent with the data collected. Assuming acceptable measurement models were present, further path
analysis would provide a means of assessing the nomological validity of the measurement models. The indicator variables were formed into composite scores for the latent first order factors. The composite scores formed served as indicator variables at the first order level for estimation of the structural model that is the basis of the hypothesis tests in the next section.

Having determined that the latent constructs and their observed indicator variables possessed acceptable measurement properties, the step two of the model development process was proceeded and the overall measurement model, i.e. the full structural equation model shown in Figure 4.1, was then estimated and evaluated.

5.6 Estimation of Structural Model and Test of Hypotheses

5.6.1 Estimation of Structural Model

This section tests the goodness-of-fit of the overall measurement model, i.e. structural model, the second step in the two-step model building process (Anderson and Gerbing 1988). The three piecewise measurement models of TQOR, MARKOR and PERFORM specify how they are measured in terms of observed or indicator variables. The connections between the three piecewise measurement models form the structural model that specifies the hypothesized relationships among the three measurement models. The "proposed" model displayed in Figure 4.1 combines the measurement models to form into a structural model showing the relationships among the three research constructs which are represented by the paths (Gammas 1.1, 2.1 and Phi 2,1). As all the possible paths between constructs were proposed, the structural model can be regarded as saturated. The structural model was used to evaluate the hypothesized relationships using path analysis.

Same as the procedures in the estimation of the measurement models at the second order level, composite scores were used to estimate the structural model because of the large number of indicator variables involved and the complexity of the model if all the indicator variables were directly used. The composite scores were used as observed indicators to represent first order factors and to estimate the structural model at the second order level. Second order factors were employed in order to determine
whether general statements could be made about the relationships between higher order constructs of interest such as total quality orientation and market orientation and not between their underlying dimensions. A model employing second order constructs was also viewed as potentially providing insightful information about the relative importance of the dimensions to their higher order constructs. This information could be obtained in the measurement model that examines the relative strengths of the path coefficients between the first and the second order constructs.

While the estimates provided important information that can be used to describe the latent (second order) constructs and their interrelationships, they do not provide any indication of the assessment of the fit of the overall model. As an a priori defined model was posited for testing, a significant model fit is important as it represents the congruence of the model implied factor structure and the observed data. Without a significant model fit, model respecification is required to reconceptualize the model. Once this model fit is determined, then the importance of the parameter estimates can be more clearly evaluated.

The structural model was estimated with each first order factor loaded on their respective higher order constructs. In Table 5.11, the results for the individual paths in the structural model as depicted in Figure 5.7 are presented. The overall fit of the structural model was considered adequate with the results displayed in Table 5.12. Except the total quality orientation to organizational performance path, the completely standardized path estimates indicated significant relationships among the constructs.

While estimation of the structural model only involved constructs at the second order level, the indicator variables at the zero order level, i.e. questionnaire items, are not shown in Figure 5.7 because composite scores were used for the latent constructs at the first order level. The lambda coefficients that represent the correspondence between the indicator variables and the first order factors, and the deltas that represent measurement errors associated with the indicator variables for the first order factors are also not shown in the model depicted in Figure 5.7.
<table>
<thead>
<tr>
<th>Structural Paths</th>
<th>Parameter Estimates</th>
<th>Completely Stdized Estimates</th>
<th>Standard Error</th>
<th>t-value</th>
<th>Completely Stidized Error Variance Estimate (β)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Quality Orientation (&quot;\rightarrow) Market Orientation - (Hypotheses 1)</td>
<td>Φ 2.1</td>
<td>0.89</td>
<td>0.04</td>
<td>9.76</td>
<td>--</td>
</tr>
<tr>
<td>Total Quality Orientation (&quot;\rightarrow) Organizational Performance (Hypotheses 2)</td>
<td>γ 1.1</td>
<td>0.04</td>
<td>0.10</td>
<td>0.33</td>
<td>--</td>
</tr>
<tr>
<td>Market Orientation (&quot;\rightarrow) Organizational Performance (Hypotheses 3)</td>
<td>γ 2.1</td>
<td>0.89</td>
<td>0.11</td>
<td>6.80</td>
<td>--</td>
</tr>
</tbody>
</table>

### Measurement Model

#### Total Quality Orientation Construct (TQOR)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>t-value</th>
<th>β Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQ1 - People and Customer Management*</td>
<td>λ 1.1</td>
<td>0.84</td>
<td>--</td>
<td>0.30</td>
</tr>
<tr>
<td>TQ2 - Supplier Partnership</td>
<td>λ 2.1</td>
<td>0.65</td>
<td>0.06</td>
<td>12.7</td>
</tr>
<tr>
<td>TQ3 - Communication of Improvement Information</td>
<td>λ 3.1</td>
<td>0.85</td>
<td>0.06</td>
<td>18.9</td>
</tr>
<tr>
<td>TQ4 - Customer Satisfaction Orientation</td>
<td>λ 4.1</td>
<td>0.83</td>
<td>0.06</td>
<td>18.3</td>
</tr>
<tr>
<td>TQ5 - External Interface Management</td>
<td>λ 5.1</td>
<td>0.83</td>
<td>0.06</td>
<td>18.3</td>
</tr>
<tr>
<td>TQ6 - Strategic Quality Management</td>
<td>λ 6.1</td>
<td>0.91</td>
<td>0.05</td>
<td>21.6</td>
</tr>
<tr>
<td>TQ7 - Teamwork Structures for Improvement</td>
<td>λ 7.1</td>
<td>0.75</td>
<td>0.07</td>
<td>15.7</td>
</tr>
<tr>
<td>TQ8 - Operational Quality Planning</td>
<td>λ 8.1</td>
<td>0.69</td>
<td>0.06</td>
<td>13.8</td>
</tr>
<tr>
<td>TQ9 - Quality Improvement Measurement Systems</td>
<td>λ 9.1</td>
<td>0.87</td>
<td>0.05</td>
<td>19.7</td>
</tr>
<tr>
<td>TQ10 - Corporate Quality Culture</td>
<td>λ 10.1</td>
<td>0.85</td>
<td>0.07</td>
<td>18.8</td>
</tr>
</tbody>
</table>

#### Market Orientation Construct (MARKOR)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>t-value</th>
<th>β Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>MO1 - Market Intelligence Generation*</td>
<td>λ 1.2</td>
<td>0.85</td>
<td>--</td>
<td>0.28</td>
</tr>
<tr>
<td>MO2 - Market Intelligence Dissemination</td>
<td>λ 2.2</td>
<td>0.79</td>
<td>0.06</td>
<td>16.5</td>
</tr>
<tr>
<td>MO3 - Responsiveness to Market Intelligence</td>
<td>λ 3.2</td>
<td>0.83</td>
<td>0.04</td>
<td>18</td>
</tr>
</tbody>
</table>

#### Organizational Performance Construct (PERFORM)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>t-value</th>
<th>β Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP1 - Motivation Performance*</td>
<td>λ 1.3</td>
<td>0.81</td>
<td>--</td>
<td>0.35</td>
</tr>
<tr>
<td>OP2 - Market Performance</td>
<td>λ 2.3</td>
<td>0.87</td>
<td>0.06</td>
<td>17.6</td>
</tr>
<tr>
<td>OP3 - Productivity Performance</td>
<td>λ 3.3</td>
<td>0.76</td>
<td>0.07</td>
<td>14.7</td>
</tr>
<tr>
<td>OP4 - Societal Performance</td>
<td>λ 4.3</td>
<td>0.84</td>
<td>0.06</td>
<td>16.7</td>
</tr>
</tbody>
</table>

Table 5.11 Overall Measurement (Structural) Model Estimates

* The corresponding parameter was fixed to a value of 1.00 (unstandardized) to set the scale of measurement

The structural model was estimated and a reasonable fit was obtained, χ²=300.1, df=116, p=0.00, though the chi-square statistic was significant. This was expected given the large amount of variables in the model (Baggozi and Yi 1988). However, other indicators of goodness-of-fit suggested that the model fits well, GFI=0.90, CFI=0.96, NFI=0.93, RMR=0.022. Only 11% of the standardized residuals exceeded two in absolute value.

The estimates of the loadings of the first order factors on the second order constructs were also tested through t-value, and all lambda parameters were found to be significant, i.e. t > 2.0. As all of the goodness-of-fit criteria exceeded the cut-off level
set previously (e.g. GFI, CFI and NFI > 0.90), the structure of the model was considered reasonably accurate with respect to the number of variables, directions of causality and errors in equations. The proposed model was thus considered accurately accounting for the variability observed in the data, an acceptable level of model fit.

To provide greater confidence for the model displayed in Figure 5.7 (the proposed model, M1) and to check for better-fitting, more parsimonious models, the proposed model was tested against an alternative model, the independence model (the null model, M0) model. The null model implies that relationships among the three constructs are independent i.e. restrict from free estimation to zero. This means no relationships at all among total quality orientation, market orientation and organizational performance. Anderson and Gerbing (1988) recommended this procedure and suggested that a chi-square difference test be used to test the null hypothesis M1-M0 = 0. The estimates of the null model and the goodness-of-fit comparisons with the proposed model are shown in Table 5.12.

Comparison of the proposed model with the null model showed support for fit of the proposed model. The null model was found to have an inadequate fit to the data as indicated by a large and significant chi-square value ($\chi^2 = 974.8$, df = 119, $p=0.00$), a GFI of 0.76, a CFI of 0.81, a NFI of 0.79 and a RMR of 0.26. A comparison of the RMR also showed that the proposed model had a lower value that means that there is a better fit between the proposed model and the observed data. Also, the proposed model had a smaller number of standardized residuals greater than 2.0, resulting in a lower residual percentage.

For the GFI, CFI, and NFI, those goodness-of-fit indicators were higher for the proposed model than the null model. The relevant test statistics (M1 had 116 df and a $\chi^2$ of 300.1, M0 had 119 df and a $\chi^2$ of 974.8) led to a significant chi-square test ($\chi^2$ difference was 674.7 at 3 df) and an acceptance of M1. While the proposed model was found to be better than the null model for examining the relationships among total quality orientation, market orientation and organizational performance, the proposed model was accepted and used for hypothesis testing.
Figure 5.7 Overall Measurement (Structural) Model Estimates

Note: t-values in parentheses, t-values of 1.65 or greater are significant at the 0.5 level, and t-values of 1.96 or greater are significant at p < .01 level (The dotted lined coefficient is nonsignificant).
<table>
<thead>
<tr>
<th>Goodness-of-Fit Indices</th>
<th>Proposed Model (M1)</th>
<th>Null Model (M0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi Square (χ²)</td>
<td>300.1</td>
<td>974.8</td>
</tr>
<tr>
<td>Degree of Freedom (df)</td>
<td>116</td>
<td>119</td>
</tr>
<tr>
<td>Probability (Prob.)</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Goodness-of-fit Index (GFI)</td>
<td>0.90</td>
<td>0.76</td>
</tr>
<tr>
<td>Normed Fit Index (NFI)</td>
<td>0.93</td>
<td>0.79</td>
</tr>
<tr>
<td>Comparative Fit Index (CFI)</td>
<td>0.96</td>
<td>0.81</td>
</tr>
<tr>
<td>Root Mean Square (RMR)</td>
<td>0.022</td>
<td>0.26</td>
</tr>
<tr>
<td>% Standardized Residuals &gt; 2.0</td>
<td>11</td>
<td>55</td>
</tr>
</tbody>
</table>

**Table 5.12 Comparison of the Proposed Model with Null Model**

An examination of the path coefficients among higher order constructs depicted in Figure 5.7, and their associated t-values showed that, except the TQOR --> PERFORM path, the completely standardized path estimates were all significantly different from zero, indicating significant relationships among the constructs, i.e. TQOR <-- MARKOR, MARKOR --> PERFORM. The relationships between the second order constructs were clearly detectable and the values of the parameter estimates for the structural model, along with their standard errors and t-values are given in Table 5.11. The relationship that is insignificant is shown with a dotted line in Figure 5.7.

The proposed model was also supported by the total coefficient of determination. The total coefficient of determination is a measure of how well the indicators, i.e. x variables in the exogenous constructs, jointly serve as measurement instruments for all the dependent latent variables, i.e. y variables in the endogenous constructs (Jöreskog and Sörbom 1996). For the test of nomological validity in the study, it is a measure of the degree to which constructs behave as expected in relation to other constructs in the nomological net (Churchill 1979). It is based on the explicit investigation of constructs and measures in terms of formal hypotheses derived from theory (Peter and Churchill 1986), involving investigation of both the theoretical relationship between different constructs and the empirical relationship between measures of those different constructs. Since the proposed model is theoretically based, nomological validity was assessed by testing the model. The total coefficient of determination of x and y variables in the model of the study was 0.89, indicating that a substantial amount of the variance (89%) for the endogenous construct, i.e.
organizational performance, was explained by the two exogenous constructs, i.e. total quality orientation and market orientation, in the model. Nomological validity was also supported by the positive, significant intercorrelations among the three constructs shown in Table 5.9. Thus, it was considered that the proposed model successfully predict organizational performance.

5.6.2 Test of Hypotheses

The hypotheses developed in Chapter three are reproduced below and the hypotheses proposed the following relationships:

1) total quality orientation of a firm correlates positively with its market orientation.
2) total quality orientation of a firm affects positively its organizational performance,
3) market orientation of a firm affects positively its organizational performance.

Each hypothesis was tested using LISREL’s t-value of structural coefficients, i.e. \( t > 2.0 \) to be significant, with an alpha level set at 0.05. In terms of the hypothesized relationships, the results as detailed in Table 5.11 showed support for two hypotheses. The specific results for the test of hypotheses are given as follows:

Hypothesis one states that a firm’s total quality orientation correlates positively with its market orientation. Support for this hypothesis depends on the relationship (Phi 2,1 in Figure 5.7) between the total quality orientation construct and the market orientation construct. This hypothesis was supported as the value of Phi (2,1) was positively high and significant with a completely standardized path coefficient of 0.89, a standard error of 0.04 and a t-value of 9.76.

Hypothesis two states that the total quality orientation of a firm affects positively its organizational performance. Support was not received for this hypothesis as the value of gamma (1,1) was positively low and insignificant. The path coefficient was 0.04 with a standard error of 0.10 and a t-value of 0.33. An inspection of the measurement model of the total quality orientation construct found that it has only two components, i.e. people and customer management - TQ1, and customer satisfaction orientation - TQ4, that directly address the customer-oriented aspect of TQOR. Other components
of the construct tend to focus on the internal improvement aspect of a quality management system. For instance, it is possible that many quality management efforts do not deliver the desired results because of their inward focus. Indeed, the impact of TQOR on PERFORM was explained by the other construct in the model, i.e. MARKOR, as the two exogenous constructs were highly correlated in the model. TQOR relates to PERFORM indirectly through MARKOR. This implies that the performance impact of a total quality orientation has to be driven with a market orientation. This is consistent with the earlier arguments in Chapter three that quality management needs to be outward-looking with a focus on market needs in order to drive performance and that the role of marketing serve as customer windows to assure a market focus in quality management efforts. The result suggested that the impact of total quality orientation on organizational performance is to be delivered through a market focus, internal improvement alone is less likely to drive organizational performance improvement.

Hypothesis three states that the market orientation of a firm affects positively its organizational performance. Support was provided for this hypothesis as the value of gamma (2.1) was positively high and significant. The path coefficient is 0.89 with a standard error of 0.11 and a t-value of 6.8 respectively. This supports that notion that firms have to be market-driven for improvement of organizational performance.

5.7 General Picture of Total Quality Orientation and Market Orientation and Organizational Performance among Companies in Hong Kong

To get a general picture of total quality orientation and market orientation among companies in Hong Kong and the organizational performance level they perceived to have achieved, the mean score of the multi-item scales of the three research constructs was calculated for each sector (manufacturing, service, construction, and public utility). Table 5.13 compares the sectoral differences of total quality orientation and market orientation in Hong Kong and the perceived organizational performance attained for each sector. One-way analysis of variance (ANOVA) was conducted with each of the industry types to test for statistically significant differences among the four types of industry in total quality orientation, market orientation, and organizational performance.
<table>
<thead>
<tr>
<th></th>
<th>Manufacturing (N = 69)</th>
<th>Service (N = 107)</th>
<th>Construction (N = 114)</th>
<th>Public/Utility (N = 14)</th>
<th>Overall</th>
<th>F ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQOR</td>
<td>3.52</td>
<td>3.64</td>
<td>3.28</td>
<td>3.93</td>
<td>3.49</td>
<td>7.17*</td>
</tr>
<tr>
<td>MARKOR</td>
<td>3.68</td>
<td>3.74</td>
<td>3.40</td>
<td>3.82</td>
<td>3.60</td>
<td>6.08*</td>
</tr>
<tr>
<td>PERFORM</td>
<td>3.63</td>
<td>3.67</td>
<td>3.37</td>
<td>3.90</td>
<td>3.56</td>
<td>6.37*</td>
</tr>
</tbody>
</table>

Table 5.13 Mean, One-way ANOVA of Total Quality Orientation, Market Orientation, and Organizational Performance by Industry Types

* The corresponding parameter is significant at P < 0.01 level

As shown by the results of ANOVA, the level of total quality orientation and market orientation differed by industry types with the public utility sector achieving the highest level of total quality orientation and market orientation, followed by the service sector, and then the manufacturing sector. The construction sector appeared to be least total quality- and market-oriented.

Congruent with the results presented in section 5.6, the findings displayed in Table 5.13 shows that total quality orientation and market orientation in organizations go in the same direction (positively correlated) and that high level of TQOR/MARKOR alignment impact positively on organizational performance. It was demonstrated in the case of the public utility sector that it has the highest level of TQOR/MARKOR alignment (TQOR=3.93, MARKOR=3.82), resulting in a higher level of perceived organizational performance (PERFORM=3.90) relative to the construction sector which achieves both the lowest level of TQOR/MARKOR alignment and perceived organizational performance among the industry types in Hong Kong (TQOR=3.28, MARKOR=3.40, PERFORM=3.37).

5.8 Classification of Organizations: High Performers and Low Performers

The previous sections have presented the results of the survey research across a large sample. The association between total quality orientation and market orientation was shown to be strong. Both total quality orientation and market orientation were found to have an impact on organizational performance, but the former needs to be market-oriented to drive its performance impact.
However, the findings from the test of the empirical model and the hypotheses seemed inadequate to explain the process of TQOR/MARKOR alignment and their management interface in organization. Some of the problems identified in Chapter three have remained unanswered. To uncover the factors differentiating between the high performers (organizations with high level of TQOR/MARKOR alignment) and the low performers (organizations with low level of TQOR/MARKOR alignment), and to have a better understanding of how and why TQM and marketing affect organizational performance, qualitative research with case study approach was conducted with a selected group of companies (two high performers and two low performers) to address the research problems identified but not completely answered by the large sample cross-sectional mail survey. Table 5.14 shows the distribution of the high and the low performers classified from the results of the survey research. The classification of the high, medium, and low performers in Table 5.14 was based on the composite scores, i.e. average of the questionnaire items in a construct, the responding organizations reported in the survey research.

As shown in Table 5.14, most of the responding organizations (N=127, 41.8%) had high level of TQOR/MARKOR alignment with a composite score of 3.51 or above in both the total quality orientation and the market orientation construct. Among them, 115 achieved high level of organizational performance, 12 attained medium level of organizational performance, and none of them had low level of organizational performance. The second largest cluster in Table 5.14 is in the medium performance range, i.e. composite score of 2.5-3.5, in both the total quality orientation and the market orientation constructs. The organizations fell in this cluster (N=84, 27.6%) achieved medium level of TQOR/MARKOR alignment. Of them, 68 attained medium level of organizational performance, 15 achieved high level of organizational performance, and only 1 had low level of organizational performance. For the organizations achieving a composite score of 2.49 or below in both the constructs of total quality orientation and market orientation, they were classified as having low level of TQOR/MARKOR alignment. The number of responding organizations belonged to this group was not large (N=10, 3.3%), and half of them had low level of organizational performance, and the rest of the them attained medium level of
organizational performance, none of them demonstrated achievement of high level of organizational performance.

To facilitate theoretical replication for case studies in the qualitative phase of the study, cases showing different patterns should be selected, i.e. high and low level of TQOR/MARKOR alignment. However, there were only five out of the ten low performers, identified in the quantitative research, indicated willingness to participate in the qualitative research. Only two of these five low performers agreed to site visits and participation in the second phase qualitative research. In this regard, these two low performers showing low level of TQOR/MARKOR alignment (TQOR < 2.5, MARKOR < 2.5) together with two high performers showing high level of TQOR/MARKOR alignment (TQOR > 3.5, MARKOR > 3.5) were selected for in-depth case studies. It would be beneficial to show a continuum of TQOR/MARKOR alignment in the qualitative research with cases having high, medium, and low level of TQOR/MARKOR alignment respectively. However, the intent of the qualitative research was to compare and contrast the high with the low performers and to uncover the factors that differentiate them, medium performers were not selected for the case studies. Therefore, four cases were selected for participation in the qualitative research. The case study selection facilitated both literal replication (comparison of cases with similar patterns) and theoretical replication (comparison of cases with different patterns). Attempt was also made to study a case shown in Table 5.14 showing a strange pattern, i.e. low level of total quality orientation, but high level of market orientation (TQOR < 2.5, MARKOR > 3.5). However, case study research was not conducted with that organization because of its unwillingness to participate in the second stage of the study.

Considering the above-mentioned conditions, Kowloon Canton Railway Corporate (KCRC) and Island Shangri-La (representing organizations with high level of TQOR/MARKOR alignment), and Associated Engineers Limited and BYME (representing organizations with low level of TQOR/MARKOR alignment) were selected. The detailed independent case analysis and cross-case comparisons are presented in Chapter six.
<table>
<thead>
<tr>
<th></th>
<th>MARKOR &lt; 2.5 (Low)</th>
<th>MARKOR 2.5 - 3.5 (Medium)</th>
<th>MARKOR &gt; 3.5 (High)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TQOR &gt; 3.5 (High)</td>
<td>--</td>
<td>31 (10.2%)</td>
<td>127 (41.8%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M = 21</td>
<td>M = 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H = 10</td>
<td>H = 112</td>
</tr>
<tr>
<td>TQOR 2.5 - 3.5 (Medium)</td>
<td>4 (1.3%)</td>
<td>84 (27.6%)</td>
<td>32 (10.5%)</td>
</tr>
<tr>
<td></td>
<td>L = 1</td>
<td>L = 1</td>
<td>M = 17</td>
</tr>
<tr>
<td></td>
<td>M = 3</td>
<td>H = 15</td>
<td>H = 15</td>
</tr>
<tr>
<td>TQOR &lt; 2.5 (Low)</td>
<td>10 (3.3%)</td>
<td>15 (4.9%)</td>
<td>1 (0.3%)</td>
</tr>
<tr>
<td></td>
<td>L = 5</td>
<td>L = 5</td>
<td>M = 1</td>
</tr>
<tr>
<td></td>
<td>M = 5</td>
<td>M = 10</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.14 Classification of Performers by Levels of Quality Management and Marketing being Implemented with the Organizational Performance Levels

Note: L = Low Organizational Performance, M = Medium Organizational Performance, H = High Organizational Performance

5.9 Summary

This chapter has attempted to test the measurement models of total quality orientation, market orientation and organizational performance and their structural relationships. The traditional measures, the parameter estimates, and the overall and detailed fit indices all provided evidence supportive of the measurement properties of the constructs. The indicator variables were averaged to form composite scores to assess the measurement models at the second order level and the structural model. The structural model formed from the composite scores served as the basis of the hypothesis test in this chapter. Data collected from the large sample mail survey supported most of the structural relationships of the three constructs. Evidences were also found to support the hypotheses that there is a positive correlation between total quality orientation and market orientation, and that there is a positive affect of market orientation on organizational performance. The positive affect of total quality orientation on organizational performance was not supported by the LISREL's test results. The performance impact of total quality orientation was explained to be driven by a market focus or market orientation. Sectoral differences were found in total quality orientation and market orientation among companies in Hong Kong, with the highest for the public utility sector and the lowest for the construction sector. Lastly, the responding organizations were classified as either high, medium or low performers in total quality orientation and market orientation. A total of four cases representing different levels of TQOR/MARKOR alignment in organizations were selected for in-depth case studies that form the basis of Chapter six.
Chapter 6 -- Data Analysis - Qualitative Research

6.1 Introduction

This chapter builds on the quantitative results presented in the preceding chapter. The statistical analyses in Chapter five provided insights into the relationships between total quality orientation and market orientation, and their impact on organizational performance. This chapter provides qualitative answers to the "how" and "why" questions referred to earlier on Section 4.2.2.

To answer the research questions, post survey follow-up case studies were conducted in the qualitative (second) phase of the study to examine the management practices of companies with different levels of TQOR/MARKOR alignment, i.e. high and low. The idea was to review management practices (using responses to the survey research, on-site interviews and content analysis of other written documentation) in order to explore different viewpoints on TQM/marketing management interface, the factors affecting the TQM/marketing relationships, and the resulting impacts on organizational performance. The emphasis was on uncovering the relationships between management practices and the resulting organizational performance. The on-site interviews were designed to supplement the results of the survey research and to clarify areas of the survey research results that were unclear for better understanding of TQM/marketing management interface in organizations. The case study research also served to uncover the factors that might affect the hypothesized relationships among total quality orientation, market orientation and organizational performance, and to explain the phenomena.

Selection of sample organizations for the qualitative research was subject to the criteria set in Chapter four and the willingness of the organizations to participate. Initial case sites were selected based on their degree of TQOR/MARKOR alignment, i.e. high and low, as identified in the quantitative phase of the study. They were contacted for the possibility of pursuing site visits to further explore the levels of TQOR/MARKOR alignment and the levels of organizational performance in their organizations. To facilitate both literal and theoretical replication (comparison of
cases with similar and different patterns), two organizations with high level of TQOR/MARKOR alignment (to represent the high performing group) and two organizations with low level of TQOR/MARKOR alignment (to represent the low performing group) were chosen for in-depth case studies.

The four cases selected for the qualitative research in the second phase of the study described organizations occupying two extreme positions in TQOR/MARKOR alignment, i.e. high and low. Data was collected through in-depth interviews with people from different functions of the four organizations, and their documentary evidence such as company reports, brochures, quality manuals, newsletters and so forth. The organizations selected to represent the high performing group included KCRC and the Island Shangri-La hotel. These two organizations were selected because they were among the one hundred and twenty seven sample organizations in the high performing group as identified in the survey research, and also have won the HKMA’s Quality Management Award and were willing to participate in the second phase of the study. Importantly, the Award provides an independent judge of the quality management levels in the two companies that further enhances the validity of the high performing case selection in the study. AEL and BYME were selected to represent the low performing group because they were the only two among the ten sample organizations in the low performing group that agreed to participate in the second phase of the study.

The following section presents the four case studies in the form of case summary. Each case summary provides a short company profile, and describes total quality orientation, market orientation and the organizational performance levels achieved in the organizations being studied. The summaries are presented under the following headings:

1) Company Background
2) Total Quality Orientation in Organization
3) Market Orientation in Organization
4) Organizational Performance in Organization
5) Key Issues of the Case Study
The case summaries begin by presenting two organizations showing high level of TQOR/MARKOR alignment, followed by the other two organizations with low level of TQOR/MARKOR alignment. The four cases provided comparisons and contrasts of how and why organizations achieve different levels of TQOR/MARKOR alignment and therefore different levels of organizational performance. A summary classification and description of organizations for the four case studies is presented in Table 6.1.

<table>
<thead>
<tr>
<th>Companies Interviewed</th>
<th>Industry Type</th>
<th>Total Quality Orientation</th>
<th>Market Orientation</th>
<th>Level of TQOR/ MARKOR Alignment</th>
<th>Performance Improvement Achieved</th>
<th>People Interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCRC</td>
<td>Public Utility</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>General Manager (Quality), Corporate Quality Officer</td>
</tr>
<tr>
<td>Island Shangri-La</td>
<td>Service</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Director of Human Resources, Quality Improvement Manager, Training Manager</td>
</tr>
<tr>
<td>AEL</td>
<td>Construction</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Quality Assurance Officer, Engineer</td>
</tr>
<tr>
<td>BYME</td>
<td>Construction</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Quality Assurance Manager, Engineer</td>
</tr>
</tbody>
</table>

Table 6.1 Classification and Description of Organizations for Case Studies

6.2 Independent Case Summaries

6.2.1 KCRC

The Kowloon - Canton Railway Corporation (KCRC) is a self-financing public corporation providing domestic, cross-border and inter-city railway services. It operates two domestic passenger rail services, East Rail and Light Rail. East Rail operates territorial passenger services between Hung Hom and the boundary at Lo Wu, and provides access for inter-city services to Guangdong, Shanghai and Beijing in China mainland. Light Rail provides passenger services for the north west New Territory. A new rail service, West Rail, which is due to commence construction in the fourth quarter of 1998, will provide passenger services between west New Territory and the urban area in Kowloon. KCRC is one of the world’s most successful railways, carrying over one million people each day, employing over 3,700 staff with
an annual turnover of HK$ 3,718 million in 1997. In addition to railway services, KCRC operates feeder buses, and develops, owns, and manages property. The managing board of KCRC consists of a chairman, a chief executive, and eight other government appointed members. The businesses operated by the Corporation described above are supported by the following functional divisions: East Rail, Light Rail, West Rail, finance, property, company secretariat and legal, China affairs, human resources, internal audit, corporate affairs and corporate quality.

Looking forward to its future, KCRC started its quality initiatives in 1991 with its “Quest for Excellence” program. The quality department in KCRC assumes the role of facilitating, improving, leading quality initiatives, and providing the Corporation with guidance in applying world class management practices. To improve quality, KCRC decided in 1993 to work incrementally towards achieving ISO 9000 certification. Within four years, KCRC gained a corporation-wide ISO 9000 certification in 1997 accredited by the Hong Kong Quality Assurance Agency, the first among transport undertakings in Asia. In addition to the ISO 9000 certification, KCRC won the 1995 Hong Kong Management Association’s Quality Management Award, the Hong Kong version of the Malcolm Baldrige National Quality Award in the United States, which is generally regarded as a blueprint of TQM. The success of its management practices is also recognized by the award of “The Management Award of Asia: General Management” in 1996.

KCRC has a clear system to translate its corporate vision into operational objectives for realization. Vision is the highest level of ideals that an organization strives to achieve. The vision of KCRC is to be a world leader in providing quality transport services on the basis of prudent commercial principles. As a roadmap for the corporate vision, KCRC sets five specific corporate goals that reflect the different aspects of the vision. The five goals of the Corporation are:

1) customer satisfaction,
2) employee satisfaction,
3) profitable growth,
4) efficiency,
5) safety.
With the vision and the mission of providing a safe, reliable, profitable and integrated railway network meeting the increasing demand for territorial, cross-boundary and inter-city railway services, the Corporation has formulated strategies and is dedicated to search better ways to:

1) serve its customers and meet performance pledges,
2) fulfill both government and corporate objectives,
3) maintain financial strength,
4) develop sound business partnerships,
5) build teamwork and commitment in staff,
6) encourage initiative and reward success.

**Total Quality Orientation in KCRC**

KCRC has a comprehensive people and customer management system to support its vision and missions. On the employee side, it has set up a corporate training department and three separate training units to equip its staff with both general management skills and on-the-job skills. The corporate training department provides induction and general management skills to the new staff recruited. The training provided by the department covers all the employees in KCRC. Alternatively, the three training units provide technical training to staff, which need job-specific skills (e.g. railway maintenance) and the training provided are selective on job nature. To ensure the effectiveness of the training provided, regular assessments are conducted in the forms of participant surveys and management reviews. The participants are requested to suggest ways of improvement for the training they receive. To encourage employee participation in quality improvement, a series of schemes and awards have been set up in KCRC to recognize employee achievements including the Annual Excellence Service Award, Staff Award, the Chairman Award and so on.

On the customer side, it has established a Passenger Liaison Group (PLG). The members of the liaison group include volunteer customers, university facilitators and operational managers of the KCRC. The Passenger Liaison Group facilitates
communication between the customers and the Corporation in order that the quality improvement efforts of KCRC can be matched to customer expectations.

For business partnerships and supplier management, KCRC has a supplier rating scheme to evaluate the supplier quality for all its purchases. Mostly, it depends on first party inspection and in some occasions it relies on quality standards such as ISO 9000 series for purchase to ensure supplier quality. For those suppliers rated as strategic for KCRC, the Corporation forms long-term partnerships with them in the forms of agreement and joint development for automated systems in data exchange for purchasing and ordering. If the product or service quality provided by the suppliers fall below the expectations of KCRC, the quality and standard requirements of the KCRC would be communicated back to those suppliers for improvement. Most importantly, KCRC has a quality awareness programs in the forms of presentations and seminars to communicate the benefits of quality improvement to its suppliers.

In KCRC, there is no specific guideline for which quality costing systems to use for quality improvement. However, it has other performance indicators to use for performance improvement such as "distance between failure". To elevate performance, the needs of employees for quality education and training are assessed annually through staff appraisal. On the other hand, in 1993 and 1995 respectively, the KCRC conducted two worldwide benchmarking studies with transport companies to learn from their best practices in terms of service and process improvement. In addition, the KCRC frequently interacts with outside groups such as the Hong Kong Total Quality Forum, the Hong Kong Quality Management Association, the Hong Kong Benchmarking Clearing House, and American Productivity and Quality Center (APQC) for mutual benefits of quality improvement. These interactions help the KCRC acquire up-to-date management best practices and the other organizations learn from the experience of KCRC in quality improvement.

To promote trust and confidence in the railway services offered, KCRC has formulated service performance pledges to its customers covering :

1) Punctuality: pledge to have 99 percent of all trains run to time and complete their journey without delay i.e. within three minutes of the scheduled running time.
2) Swiftness to inform customers: pledge to inform passengers of any delay within three minutes of its occurrence. If the service is expected to be disrupted for 20 minutes or more, the target is to provide passengers with details of the incidents and advise about what to do within 15 minutes.

3) Reliability of train services: pledge to have no more than one train failure for every 1,800 train trips operated. Also pledge to have no more than one malfunctioned air-conditioning for every 180 train trips operated.

4) Cleanliness of train: pledge to have cleaned interiors of every train before they go into daily service and that 97 percent of all trains have their external bodywork cleaned once every two days.

5) Convenience of using tickets: pledge to have all ticket machines and ticket gates fully operated at least 99 percent of the time.

6) Reliability of escalators: pledge to have the escalators operational at least 99 percent of the time,

7) Timeliness in assistance and response: pledge to have 95 percent of telephone inquiries responded within six working days, and 95 percent of written inquiries or comments answered within six working days.

8) Contingency measures: pledge to arrange alternative bus service if a train service is delayed for 20 minutes more, with the first bus operating within 30 minutes of the confirmation of the major disruption.

In addition to the service pledges, KCRC evaluates customer satisfaction every two months in the form of passenger surveys at platform. Mystery passenger surveys are also conducted at sites to assess the extent to which the service level provided is up to the "best practice" standards.

In terms of its social responsibility, KCRC recognizes it by following strictly the employment law in Hong Kong and being environmental conscious in its business operations. KCRC is an equal opportunity employer in Hong Kong. It strongly promotes equal opportunity in employment and abides by the employment law in Hong Kong. With respect to environmental consciousness, KCRC has serious concerns on the environmental impact that its operations might bring to the environment. It has constructed noise barriers in some railway stations in order to minimize the noise disturbance to the inhabitants nearby. In addition, the bus
department and the East Rail’s infrastructure and buildings department in KCRC has been running in compliance with the ISO 14001 environmental standards and both the departments were awarded certification of ISO 14001 in 1997. The environmental consciousness of the Corporation is also demonstrated in its corporate environmental policy.

In terms of its responsibility to the customers, KCRC ensures it via the PLG described earlier and other means to learn the need requirements of the customers and their suggestions for future development of KCRC services. For example, the PLG investigates into the demographic information and dispersion of each station and recommends expansion of capacity, facilities, and service level provided for the stations concerned. To ensure company-wide efforts for customer satisfaction, cross-functional departmental meetings are organized regularly to discuss customer related issues and the future development of KCRC.

Managers at KCRC provide strong leadership to promote quality issues. For every department in KCRC, managers of the departments concerned have to ensure that their departments are running in accordance with the corporate quality policy. They are held responsible to audit the quality practices in their departments and to correct any discrepancy, if found, between the practices and the policy. In addition to the active involvement of managers, KCRC considers employee participation and satisfaction critical for attaining the vision of the Corporation as teamwork and employee satisfaction have been listed as one of the goals of the Corporation. To encourage employee participation, KCRC has set up a Continuing Improving Club. The aim of the Club is to listen to the needs and suggestions of employees for quality improvement. Furthermore, employees are encouraged to form their own quality control circles (QCCs) in their departments. Top management participation in the QCCs and quality management can be found in the steering committee consisting of cross functional members and a director of KCRC. The function of the steering committee is to coordinate all the QCCs activities in the Corporation. An award is granted every year to the best quality control circle activity to recognize quality improvement achievements of employees and to encourage continuous improvement in the Corporation. For example, a quality circle named “sparkle circle” was awarded in 1998 for efforts in improvement of queuing order and enhancement of safe
boarding and alighting of passengers. Other than the QCCs, there are two additional teams in KCRC for continuous improvement, namely the quest for excellence team and the cross-functional team. The former is responsible for quality improvement at the operational level and the latter is responsible for quality improvement at the organizational level.

Further to the in-house promotion of quality issues, KCRC promotes quality awareness outside. It gives talks and presentations to communicate the quality value of KCRC to the public, for example, at the Hong Kong Total Quality Forum. It also grants visits to other companies to learn KCRC’s achievements in quality improvement.

As for the team work structure for quality improvement in KCRC, it displays flexibility for improvement activities across functions, though work in KCRC is organized according to specialization of functions rather than key business processes that reflect customer needs. For example, the steering committee mentioned earlier coordinates and facilitates QCCs activities across function. For a business process of cross-functional nature, a process owner is nominated by the general manager or the corporate director, depending on the level of the process involved, to look after process improvement across business functions. For instance, a process owner is appointed for revenue collection and handling in Light Rail with the result being a 8% increase in efficiency in the revenue collection and handling process.

In addition to the long-term plan of being a world leader in providing quality transport services on the basis of prudent commercial principles, KCRC has its short-term plans that are demonstrated in its service pledges. The pledges are formulated basing on both the customer requirements and the capability of the Corporation. These pledges described earlier are continuously reviewed by the top management according to customer expectations as well as the service performance of the KCRC, as indicated by the internal performance specifications and indices.

Regarding the quality improvement measurement systems, the KCRC has set up an executive information system to provide key quality related figures, for examples, timeliness, financial figures, customer satisfaction indices and so forth. The role of the
system is to consolidate all the information in the Corporation to support management decisions for quality improvement. To ensure reliability and timeliness of data and information, each department is held responsible for providing and updating the data and information in the system.

The KCRC is aware that customer satisfaction, total participation, and continuous improvement are crucial to its quality improvement efforts. It is reflected in the corporate culture of KCRC and its core values: Keep customer first. Continue improving, Respect and trust, Communicate effectively (KCRC). The KCRC is confident that quality culture in the Corporation is company-wide and is sustained by its strive for five goals: customer satisfaction, employee satisfaction, profitable growth, efficiency and safety.

**Market Orientation in KCRC**

Through the PLG, KCRC meets customers frequently, approximately three to four times a year. The content of discussion with the customers centers around fare price, services provided, and facilities in KCRC. It is hoped that the management-customer meetings via the PLG can help the Corporation to get a better understanding of customer needs and expectations. The customer-oriented aspect of KCRC is reflected in its bi-monthly customer index through customer satisfaction surveys. However, the customer satisfaction surveys and the needs analysis of customers are not conducted by KCRC itself. Rather, KCRC hires consulting agencies to conduct surveys on customer satisfaction and to analyze the customer needs and the capabilities of the Corporation to meet those needs in the future. In addition to the focus on customers, the KCRC is conscious of the environmental changes that might affect the capabilities of the Corporation to satisfy customers including changes in technology, management practices, and government regulations. To keep abreast of the changes, KCRC actively interacts with outside groups in the forms of attending seminars, giving presentations, and conducting benchmarking studies. Furthermore, its corporate affairs division maintains active dialogues with members of the Legislature and the Transport Advisory Committee of the Government as well as other concerned community groups. The staff of the division regularly attend Municipal Councils and District Board meetings to explain KCRC’s policies and plans. All these activities
demonstrate the proactiveness of KCRC in market intelligence generation and cultivation of relationships with all its related organizational actors including customers and employees.

The PLG under the corporate affairs division takes the lead to listen to the customers and to communicate their voices throughout the organizational hierarchy. In addition to the PLG, KCRC has set up a customer hot line to handle customer inquiries and complaints. The corporate affairs division is given the responsibility to handle relations with the media and with organizations and individuals having an interest in the KCRC. The market information generated is reflected to the organizational functions concerned to plan responses. Individual staff members are informed of the latest market information generated in their regular departmental team briefings. In addition, there are regular interdepartmental meetings in KCRC to discuss problems in functional coordination and ways for improvements. Interdepartmental meeting can be called upon whenever needed in KCRC. Dissemination of market intelligence is ensured in KCRC.

As there are regular interdepartmental meetings (with the heads of individual departments involved) in KCRC to address functional coordination, activities within and between different departments in KCRC appear to be well coordinated. The establishment of PLG, the customer hot line and the active participation in community activities facilitate detection of changes in the customer and market requirements. The customer satisfaction survey conducted bi-monthly also helps the Corporation to keep track of customer satisfaction in KCRC and to detect the discrepancies, if any, between the service level it provides and the standards set in its service pledges. In addition, the senior management plans responses to the changes in the market place in the interdepartmental meetings. The top management periodically reviews (at least once a year) the Corporation's goals and objectives as well as other matters (such as organizational structure) pertinent to the changing business environment and sets directions for the Corporation. The KCRC is confident that the Corporation is responsive to the market.
Organizational Performance in KCRC

KCRC endeavors to promote high level of competence by encouraging all employees to undergo training. The management believes that its employees are satisfied with the KCRC’s overall performance on the employee side. In terms of the training provided, employees are equipped sufficiently with both the general management and job specific skills required on the job. In terms of job satisfaction and job security, employee turnover rate in 1997 was 7.3% that compared favorably with the average Hong Kong employee turnover rate of 20.4%. As for the safety of the job environment, KCRC maintains that it has been under continuous improvement as safety is being pursued as one of the corporate goal of KCRC, though the passengers and public injured per million passengers carried has experienced a slight increase from .47 in 1996 to .59 in 1997.

As KCRC is the sole provider of railway services in Hong Kong, no reference price trend within industry competition can be made. However, during 1997, KCRC carried an average of 1.17 million passengers each day, representing a growth rate of 4% over the previous year. The total number of passengers in the East Rail of KCRC has been increasing from 232 million in 1995 to 261 million in 1997. Alternatively, the total number of passengers in its Light Rail has also grown up from 123 million in 1995 to 126 million in 1997. In many cases, both its East Rail and Light Rail met all the corporate key performance pledges and targets, including those on punctuality, service delivery, equipment availability, and response to passenger inquiries. Table 6.2 shows the selected key performance pledges and targets in KCRC, and its performance indices in 1997.

Regarding productivity of KCRC, revenue generated from operations has been in the upward trend, increased from HK$ 2,973 million in 1995 to HK$ 3,718 million in 1997. Revenue per employee increased from HK$ .85 million in 1995 to HK$ .997 million in 1997. Furthermore, the return on average net fixed asset in KCRC has recorded growth from 11% in 1995 to 12% in 1997. The Corporation also continues to achieve gains in productivity, measured by 3% decline in real operating cost per passenger in 1997. Table 6.3 displays the revenue from operations, the employee
establishment, and the selected productivity indices of KCRC during the past three years.

<table>
<thead>
<tr>
<th>Service Delivery</th>
<th>Target Performance Level (East Rail)</th>
<th>99%</th>
<th>Actual Performance Level (East Rail)</th>
<th>99.7%</th>
<th>Target Performance Level (Light Rail)</th>
<th>99%</th>
<th>Actual Performance Level (Light Rail)</th>
<th>99.9%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punctuality</td>
<td>99%</td>
<td></td>
<td>99%</td>
<td></td>
<td>99%</td>
<td></td>
<td>99.4%</td>
<td></td>
</tr>
<tr>
<td>Availability of Ticket Vending Machines</td>
<td>99%</td>
<td>99%</td>
<td>99%</td>
<td>99%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability of Feeder Bus</td>
<td>99%</td>
<td>99.8%</td>
<td>99%</td>
<td>99.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response to Inquiry (Tel.)</td>
<td>95%</td>
<td>99.99%</td>
<td>95%</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response to Inquiry (Letter)</td>
<td>95%</td>
<td>99.84%</td>
<td>95%</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Major Delay for the Whole Year (20 Mins or more)</td>
<td>Minimize</td>
<td>5</td>
<td>Minimize</td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-train Air-conditioning Failures per Month (on average)</td>
<td>Minimize</td>
<td>3</td>
<td>Minimize</td>
<td>.58</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.2 Comparisons of Target and Actual Performance of East Rail and Light Rail of KCRC in 1997

<table>
<thead>
<tr>
<th>Years</th>
<th>1995</th>
<th>1996</th>
<th>1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue from operations (HK$ million)</td>
<td>2,973</td>
<td>3,294</td>
<td>3,718</td>
</tr>
<tr>
<td>Employee establishment</td>
<td>3,496</td>
<td>3,512</td>
<td>3,731</td>
</tr>
<tr>
<td>Revenue per employee (HK$ million)</td>
<td>.850</td>
<td>.938</td>
<td>.997</td>
</tr>
<tr>
<td>Return on average net fixed asset (%)</td>
<td>11%</td>
<td>11%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Table 6.3 Revenue from Operations, Employee Establishment and Selected Productivity Indices of KCRC

With regard to the societal impact, the level of recognition of environmental protection in KCRC is increasing. Two departments in KCRC, bus department and infrastructure and buildings department operate under the ISO 14000 environmental standards. The KCRC continues to use raw materials, resources and energy as efficiently as possible through good management skills and environmental planning. Other key functions in KCRC such as the East Rail division's rolling stock department and the Light Rail division's engineering department are now seeking ISO 14001 certification. Furthermore, the Corporation is undertaking the West Rail's
construction together with an extensive landscaping and restoration program. The KCRC believes that the new railway will help to reduce air pollution, one of the Hong Kong's most serious environmental problems, by eliminating the need for an equivalent of 2,500 bus trips per day, thus significantly reducing vehicle exhaust emissions. In addition, the rights of customers have been recognized in KCRC. Customer expectations are reflected in both the KCRC's regular customer surveys and other suggestion systems such as PLG and the customer hotline. Alternatively, the employee establishment of KCRC has increased from 3,496 in 1995 to 3,731 in 1997, creating job opportunities for the Hong Kong people.

**Key Issues of the Case Study**

Quality improvement is a major component of the KCRC's strategy. With a daily carriage of over one million passengers, quality management provides KCRC with an opportunity to reach for the organizational goals of customer satisfaction and operational efficiency. The Corporation is also highly market-oriented in response to customer needs and market changes. The company's success is built largely on its ability to translate the organizational goals into operational objectives. This enables the KCRC to cascade the company's vision throughout the organizational hierarchy, pursuing a number of strategic initiatives. One of the key to the Corporation's success has been top management commitment to continuous improvement for customer satisfaction. This has been facilitated by provision of training, motivation and empowerment of employees, and flexible organizational structure that help to align the Corporation's strategies with its goals.

**6.2.2 Island Shangri-La**

Located in the central business district of Hong Kong, the Island Shangri-La (ISL) is a deluxe hotel with 565 rooms offering spectacular views of the Harbor and the Peak. ISL belongs to the Shangri-La International Limited which operates 34 deluxe and first class hotels principally in the Asia-pacific region. Opened in 1991, ISL considers itself an Asian hotel offering Asian standards and style of hospitality and services. With staff establishment of over 820, ISL operates with the philosophy of "Distinguished Asian Hospitality from Caring People" and commits to provide its
guests with the possible highest level of service quality. On the belief that satisfied employees lead to satisfied customers by delivering quality customer services, ISL is dedicated to care people, both the employees and the customers. The management structure of ISL is composed of a general manager and a hotel manager supported by six functional divisions: finance, marketing, rooms, food & beverage, engineering, and human resources.

The practice of quality management has been with ISL since its opening in 1991. The hotel believes that provision of quality service is the key for survival in today's competitive hotel industry. To win over competition, ISL is devoted to deliver quality service and customer satisfaction by improving every hotel operation. To have the caring people to provide caring services to the customers, ISL strongly encourages its employees to embrace the hotel's philosophy. The human resources division functions as a driver of quality initiative in ISL. The top management of the hotel involves in quality improvement by forming an executive committee (EXCOM) which consists of the general manager, the hotel manager, and the six division heads. The EXCOM plays the role of reinforcing quality values in ISL and provides guidance to facilitate quality improvement activities in the hotel.

ISL bases its quality management practices on the model of the Malcolm Baldrige National Quality Award (MBNQA) in the United States. The MBNQA is generally taken as the framework of total quality management by many organizations. ISL adopts the model for self-assessment and performance improvement. The quality improvement efforts of ISL have won many recognitions and awards. For overall achievement, ISL was voted as one of the top ten hotels in the world by European Magazine in 1996, and was named amongst the top hotels in Hong Kong and the top five hotels in Asia by Asiawhisky magazine in 1997. For achievements in quality improvement, ISL became the first independent hotel in Hong Kong to win the Hong Kong Management Association's Quality Management Award in 1997 which is modeled on the MBNQA. In addition, ISL received the first ISO 14001 certification among hotels in Asia in 1997. The award of ISO 14001 certification recognizes the awareness and contributions of ISL in environmental protection.
In support of the hotel's philosophy, ISL has formulated clear vision and missions. Vision is the highest level of organizational goal while mission is the target for achievement of the organizational vision. The vision of ISL is to become a dominant deluxe hotel in Hong Kong. To achieve the vision, the hotel embraces the following missions, which underpin the different dimensions of the ISL's vision:

1) becomes market leader in the deluxe hotel segment,
2) provides consistent quality, service, facilities and products to exceed customer expectations at all time,
3) delivers maximum profits to its shareholders,
4) becomes the preferred employer in the hotel industry,
5) becomes a highly respected company within the community.

In addition, ISL has set a series of guiding principles (values) to operationalize the vision and missions of the hotel. The principles provide management guidance to the hotel that require employees in ISL to:

1) demonstrate openness, honesty, respect and care in all the relationships in ISL.
2) make customer satisfaction a key driver of the ISL's business.
3) ensure that procedures in the hotel are user friendly and easy for customers and employees in ISL.
4) enable decision makings to take place at the customer contact points.
5) foster a balanced environment toward work, career, and personal goals.
6) instill a spirit of ownership and partnership in work in ISL.
7) make work enjoyable in ISL.
8) meet the changing customer expectations by being creative, innovative, and challenging the existing performance of ISL.
9) ensure safety in all aspects of hotel operations for customers and employees in ISL.

**Total Quality Orientation in ISL**

To achieve the organizational vision, an effective customer and people management system is established in ISL. For improvement of customer relations, daily survey is
conducted in ISL in the form of guest comment cards. The objective of the daily
customer survey is to monitor the service level of ISL. The resulting customer
satisfaction index and the written guest comments from the survey help ISL to
identify gap, if any, between customer expectations and the actual performance of the
hotel for improvement. The EXCOM goes through every detail in the guest comment
cards, performs analyses on the problems found, identifies areas for improvement, and
replies to guests for their comments and suggestions. Furthermore, periodical
customer research in the form of focus groups is organized in ISL to study customer
expectations and the relative importance of the expectations. The ISL uses the
information generated to prioritize customer needs and to formulate ways of
improvement. To integrate the voices of customers into the hotel’s strategy, results of
the customer surveys and the focus group studies are used as inputs for strategic
planning in ISL.

On the employee side, ISL has developed a comprehensive training system. ISL
provides training, both the corporate and job-specific, to its people for performance
improvement. The corporate training aims to imbue the employees with the
philosophy of “Shangri-La Care” and to share with them the importance of service
concept in ISL. As the corporate training provided in ISL covers all the employees, it
serves to cascade the quality value of “Shangri-La Care” throughout all the
organizational levels in the hotel. For job-specific training, it is offered within each
division and facilitated by the human resources division. The job-specific training is
offered selectively to employees who need on-the-job skills (e.g. service manner in
the food & beverage division). To monitor the effectiveness of the training provided,
ISL ensures it by participant surveys. The employees are requested to evaluate the
usefulness and the value of the training they receive and to suggest ways for
improvement. To mobilize employee participation in quality improvement, ISL
achieves this through team work approach and recognition of employee achievements.
Employees in ISL are encouraged to work in team for performance improvement. By
working in team, the quality values of ISL are shared and enhanced among team
members. In addition, ISL recognizes employee contributions in performance
improvement by displaying their achievements in the hotel’s bulletins and
newsletters. Employees are also treated to restaurant in the hotel for their outstanding
performance.
As a deluxe hotel, ISL strongly emphasizes the quality of incoming materials. ISL ensures supplier quality by first party audit and visits to suppliers. The hotel closely examines the incoming materials, especially for food and beverage items, to make sure that they meet the customer expectations. Other than the price factor, supplier selection in ISL is also based on the principle of equal opportunity. Being an environmental conscious hotel, ISL selects suppliers with the ethic and capability to provide clean, healthy, and environmental friendly materials. Partnerships are developed with a few suppliers to secure the quality of incoming materials. Regular information exchange with suppliers on quality requirements and their degree of conformance is carried out in ISL.

There is no specific quality costing system in ISL to gauge quality performance of the hotel. To evaluate performance, ISL adopts a series of performance indicators such as market share, revenue per room, customer satisfaction index, performance index, labor productivity, shareholder return, and the number of awards achieved by ISL. To enhance performance, ISL regularly conducts employee performance appraisal (daily through the guest comment cards) to identify, if any, employee performance gap with respect to the customer expectations. Heads of each department and division in ISL have regular dialogues with their staff to understand their needs for training and education. ISL believes that performance improvement is an ongoing process that is subject to continuous assessments. Through the ongoing assessments and the two-way communication between the management and the employees, ISL is confident to have performance improvement achieved by its people. Furthermore, the hotel frequently benchmarks other hotels of similar class and market segment, both in Hong Kong and the Asian-Pacific region, for quality improvement. The benchmarking methods adopted are in the forms of direct observations and experiences, and the areas for benchmarking cover the performance indicators used by the ISL described above. In addition to the within industry benchmarking, ISL also interacts with other organizations, for examples, Vocational Council, Hong Kong Total Quality Forum, Mass Transit Railway, Cathay Pacific, and Bank of China to share experience and benefits of quality improvement.
In order to build trust and confidence in customers for the services of ISL, individualized services are offered to the customers, giving them the sense of being recognized and cared. There is a program in ISL called “Golden Circle Program” to promote individualized guest services. To give customers the feeling of returning home, ISL records down the tastes, preferences, and special days (e.g. birthday) of the customers in order to delight them with individualized services when they visit the hotel again. For frequent and loyal customers, they are given home privileges such as special discount and priority for room reservation in the program. In addition, the daily customer survey, the resulting customer satisfaction index, and the quarterly customer satisfaction report all help the ISL to determine and improve customer satisfaction.

As for the recognition of social responsibility, ISL strongly emphasizes environmental friendliness in hotel operations. ISL includes it into its quality policy and provides guidance to employees for environmental friendly hotel operations with respect to energy saving and waste reduction. Being an equal opportunity employer, ISL provides job opportunities to the disables (four disables are currently employed) and follows strictly with the employment law in Hong Kong. In addition, ISL actively involves in community activities such as sponsoring environmental groups, organizing Christmas party for the orphans, and participating fund raising walks. Regarding new service development in ISL, for example, cuisine and buffet, the development process involves customer consultations and cross-functional team efforts to ensure satisfaction of customer needs.

At ISL, managers actively participate in quality improvement and promote quality values in the hotel. They involve in the design of quality management practices for their own departments and are empowered to make improvements. Another important role of the managers is to ensure that their subordinates have an in-depth understanding of quality values of ISL. The hotel believes that employee involvement is crucial to strategic planning. In the development of the guiding principles for the ISL’s vision, employees are involved in a variety of meetings to discuss and to examine each principle in relation to their work. Channels are provided in ISL to enable employee participation in quality improvement. For example, meetings concerning formulation of the hotel’s vision, strategies and management are held
every other month since the end of 1995. Each year, ISL hires consultant agency to conduct “Annual Staff Opinion Survey” to solicit employees’ views on performance improvement of the hotel. The rate of response to the survey was 100% and 98.9% in 1996 and 1997 respectively. There is a program in ISL called “Employee Voice Program” which invites staff to give comments on hotel performance. In both, the top management reviews the comments, suggestions, and feedback from the employees. Accordingly, responses and actions are planned to the opportunities identified for improvement.

To ensure congruence of functional strategies and practices with the hotel’s vision, ISL regularly holds off-site meetings which involve the EXCOM and the functional managers to address alignment of functional strategies with the hotel’s vision and to develop long term planning and direction of ISL. In addition, ISL adopts tools such as the Deming’s continuous improvement cycle PDCA (Plan, Do, Check, Act) to aid performance improvement. The PDCA is used for continuous improvement of existing processes and development of new processes. For example, in the development of buffet lunch in its lounge “Cyrano”, it has adopted the improvement cycle to plan (e.g. ask the customers for taste and preference, estimate the costs, facilities and staff involved), do (prepare the fixtures, equipment and menus), check (invite guests for trial menus, ask them for comments and suggestions for ways of improvement) and act (make improvement according to the comments and requirements of the customers). The use of quality improvement tool in ISL helps to ensure the design and provision of high quality services which continuously center around customer needs and requirements. As a result of employee involvement and participation, the entire hotel is aligned towards the common goal of customer satisfaction.

The hotel encourages various activities to obtain employee participation in quality improvement. For example, to motivate employee involvement. ISL selects two employees as the “Employee of the Month” for their outstanding performance every month. The selected employees are to be awarded a certificate, a cash prize of HK$ 1,500, and the opportunity to be voted as the “Employee of the Year”. Most importantly, the degree of compensation and salary increase in ISL are linked to the level of functional goals achievement which contributes to the hotel’s vision. The
employees are motivated to excel themselves to reach for their functional goals that in turn contribute to the achievement of the hotel’s vision. On the other hand, the top management frequently reinforces quality values both within (through staff meetings, posters, circulars, bulletins, newsletters) and outside the ISL (through presentations in various settings such as the Hong Kong Total Quality Forum and videos).

Regarding team work structures in ISL for quality improvement, it appears to be flexible to allow improvement activities across functions. The EXCOM directly oversees process improvement across functions and nominates team leaders to look after process improvement. These activities help to make a more flexible structure for improvement of cross-functional processes. Usually, the people in charge of the cross-functional process improvement are the members of the EXCOM. As process improvement generally involves people and activities across functions, this practice facilitates communication, coordination, and collaboration among organizational functions to achieve the common goals of continuous process improvement for customer satisfaction.

In support of the long-term goal of being a dominant deluxe hospitality in Hong Kong by caring people, ISL has formulated a series of short-term goals. The short term goals in ISL are mostly measurable and time-based covering market share, occupancy rate, employee retention rate, customer satisfaction rate and so forth. The management reviews the degree of goals’ achievement every two months, forecasts and adjusts the short-term goals according to the customer requirements and the environmental situations. The development of short-term goals and the timely measurement contribute to the achievement of the hotel’s vision.

The management of ISL believes that performance measurement is a critical component for quality improvement. ISL has adopted a balanced approach to track the hotel’s performance on different dimensions such as customer satisfaction, employee satisfaction, not just solely on the financial results. To ensure reliability, consistency, and rapid access to the data and information for quality improvement, each division in ISL is given the responsibility to analyze and provide updated information for sharing throughout the hotel. The EXCOM also assumes the facilitating role for information sharing in the forms of staff meetings, preparation of
monthly report, distribution of quality related information to the organizational functions concerned.

ISL is confident that quality culture in the hotel is organization-wide. The hotel provides various opportunities for employees to exchange information with the management and to participate in quality improvement. In turn, employees in ISL believe that their work is important to the success of the overall organization, and that productivity, customer satisfaction, and quality improvement are their responsibilities. The critical success factors to achieve these include top management involvement, team work environment, employee motivation and empowerment, and continuous improvement. The top management drives continuous improvement for customer satisfaction and the employees are in turn motivated and empowered to embrace the hotel’s philosophy of being a “Distinguished Asian hospitality from caring people” and to reach the vision of “Becoming a dominant deluxe hotel in Hong Kong”.

**Market Orientation in ISL**

As a service business, ISL is in direct contact with its customers every day. The daily customer survey conducted provides a formal communication channel between the customers and the management in ISL. The survey helps to discern customer needs and to identify any performance gaps in ISL that might fail to fulfill the customer requirements. Other than the front-line staff, the management interacts with the customers informally, for example, in the lobby and restaurants of the hotel. The management of ISL usually spends one to two hours each day in the front-line operation of the hotel. One of the major objectives of this practice is to understand the customer needs and requirements and to anticipate any forces that may affect their needs through direct dialogue with them. The daily customer survey, the customer satisfaction index, and the quarterly report on customer satisfaction in ISL demonstrate the customer oriented aspect of hotel. In addition, the ISL generates market intelligence by employing consultants to conduct market research for the hotel. The topics include customer needs analysis, customer perception of deluxe hotel services, ISL’s position in the deluxe hotel segment. The market intelligence generated gives ISL a better understanding of the competitive environment, for example, the market position of ISL relative to the competition in the deluxe hotel.
segment of the region. On the other hand, ISL is sensitive to the environmental forces that might affect the hotel including the changes in economic environment, technology level, management practices in the industry, and the government's rules and regulations. As hotel industry in Hong Kong is small and concentrated, ISL can easily sense the market forces and collect the market intelligence by direct observation and experience, usually through newspapers, magazines, word-of-mouth from the customers, and the government publications. To be effective, market intelligence generated by the ISL are to be shared among hotels of the Shangri-La group in the region.

Regarding market intelligence dissemination, the marketing department in ISL holds the responsibility of consolidating all the market information generated for sharing among staff members of the hotel. The market intelligence generated are disseminated in the weekly department head meeting and the bi-weekly division head meeting for improvement actions. Information dissemination is strongly emphasized as a critical component for success in ISL. The heads of the respective departments and divisions assume the responsibility of cascading the information to their staff at all levels for responsive actions. Market information is shared throughout ISL in a wide variety of settings including half yearly staff meeting in the ball room, departmental morning meetings, memos, notices, reports, and publications in the hotel. All these ensure effective dissemination of market intelligence in ISL.

At ISL, the services offered in the hotel are periodically reviewed for improvement. Particularly, there are morning meetings in each department to share information and to discuss issues that need immediate actions. In addition, each department and division has to compile a monthly report on their service performance, identify potential problems in operations, and develop improvement plans. Furthermore, issues identified at the departmental level are mostly brought up for discussion at the higher cross-functional level meetings, for examples, the weekly department head meeting, the bi-weekly division head meeting, and the EXCOM meeting. These mechanisms foster team-working environment in ISL and facilitate concerted efforts to plan responses to market changes. ISL believes that activities in the hotel are well connected and responsive enough to the customer requirements and changes in the marketplace.
Organizational Performance in ISL

Because of the competitive nature of the hotel industry in Hong Kong, many real figures such as turnover, profit level, performance indices (e.g. customer satisfaction and employee satisfaction) are not disclosed and were requested to be kept confidential by the hotel. The following discussion of the performance improvement achievement in ISL is based on some selected performance indicators provided by the hotel.

Quality has become the first issue at every EXCOM meeting of the hotel and the priority of ISL. It has contributed to the retention of the highest percentage of repeat visitor among top Hong Kong hotels in the past few years. In 1997, ISL achieved the largest market share among the top local hotels and evolved to be a leading hotel in the deluxe hotel segment in Hong Kong. The seven-year-old hotel also aims to become the most preferred employer in the industry and highly respected company within the community, and to deliver satisfactory profits to its shareholders. All these principles have been understood by each of its 820 staff who can cite examples of quality achievement related to their specific jobs in ISL.

Employee participation is considered as a critical component for quality improvement in ISL. To achieve this, ISL provides various motivation schemes and training to encourage employee involvement and to improve their performance. ISL believes that employee satisfaction in the hotel has been on the upward trend. Employees are equipped with the skills and knowledge required for improvement of job performance. They are also well compensated, both extrinsically and intrinsically, for their performance improvement, for examples, salary increase, promotion, and recognition. The results of the "Annual Staff Opinion Survey" indicated that ISL performs better than the norms of the Hong Kong hotel industry in many areas. These include pay-benefits, company image, management style, supervision, customer focus, empowerment, communication, training, and performance appraisal. Employee satisfaction in ISL can be reflected by its employee retention rate that has been increasing steadily over the past four years. In 1996, the rate of employee retention in ISL improved from 80 to 85 percent, the highest among hotels in Hong Kong. In
addition, job environment in terms of health and safety has been improving in ISL with a drop in accident and injury rate.

For productivity performance, ISL achieved 10.7% and 15.2% reduction in energy and water consumption respectively from 1994 to 1996, a saving of HK$ 1.15 million in electricity consumption and a saving of HK$ 164,000 in water consumption. Through the effective environmental management and quality improvement, 70-80 kg of guest towels are reused every day with the introduction of “green” concept to the customers. A total of 1.1 million pieces of papers were saved through recycling between 1996 and 1997. A productivity index is compiled every year in ISL to measure its overall performance in productivity. The index covers many areas including output/input ratio, i.e. staff/guest ratio, rooms/night ratio, food and beverage coverage ratio, and laundry coverage ratio. The productivity ratio was up 5.7% in 1996. However, due to economic downturn in the Asia pacific region, the Hong Kong industry suffered a lower occupancy rate in 1997 and the ISL is not an exception. There was only a .12% improvement in the productivity index of ISL in the year of 1997.

Both the customer satisfaction and the market share of ISL have been in upward trend since 1991. The customer satisfaction index of the ISL even tops among others in the Shangri-La’s hotel group and the index continues to improve since the opening of the hotel in 1991. Customer satisfaction in ISL can also be demonstrated in the many awards won by ISL for its excellence services, for example, the Super Star Award by Star Service. In addition, ISL has been voted many times by various magazines as the best top hotel in Hong Kong. With respect to the societal impact of ISL, the hotel is conscious of environmental protection and endeavors to environmental best practices. The spending of ISL on promotion of environmental image to the public in different media amounted to HK$ 492,000 in 1997. Its environmental policy together with its efforts in quality improvement contribute to environment protection in terms of energy saving and waste reduction. Furthermore, ISL actively participates in a wide variety of community activities, for examples, promoting quality awareness and practices, sponsoring environmental groups and charity organizations, and providing job opportunities for the disabes. ISL is confident that the hotel satisfies the interest
of multiple stakeholders in the community in addition to the customers and the employees.

**Key Issues of the Case Study**

As a service business, the hotel needs to be market-oriented to meet the increasing customer expectations. Quality management and the market-oriented culture in ISL allow the hotel to perform well in the deluxe hotel sector. The ISL has been able to implement quality management that significantly supports the hotel’s vision and drives many aspects of the hotel’s performance. The leadership of ISL has a strong commitment to provide customers with world-class services at competitive prices. It has established a comprehensive system to help translate the hotel’s vision, missions, goals, and objectives into reality. From line staff to top management, all employees of the hotel are aware of the key performance targets that are monitored on a regular basis. Among others, top management support, team work environment, employee motivation and empowerment, and continuous improvement are the key factors that help ISL to become one of the high performing deluxe hotels in Hong Kong.

**6.2.3 Summary of Cases with High Level of TQOR/MARKOR Alignment**

Both KCRC and Island Shangri-La are dedicated to quality improvement to ensure high quality services to their customers. Top management commitment and quality improvement infrastructure are evident. Top management in the two organizations is committed to provide top quality services and prioritizes quality issues in their long-term planning. They have a favorable perception of their strategies for quality improvement, of which their employees are aware. The two organizations have set goals and policies geared towards customer satisfaction, both internally and externally, and continuous improvement of their business operations. Their success to a large extent is dependent on compiling the systems and ensuring that managers and employees are motivated to consistently follow the systems and procedures decided upon. They manage to translate their company goals into operational objectives for fulfillment. Their employees are empowered and provided with training opportunities to acquire knowledge and skills needed to accomplish their company’s goals. Team work structures in both the organizations are flexible enough (e.g. process owner
appointed for process improvement across functions; channels such as QCCs activities provided for employee involvement) to enable employee participation in quality improvement that help to maintain high degree of total quality orientation in both the KCRC and ISL.

Market orientation in the two organizations is high. They show a broad approach in market intelligence generation encompassing nearly all aspects of their business operations, including information on customers, competitors, and the broader business environments such as government regulations and technology level in their industrial sectors. The two organizations employ some forms of customer surveys on a continuing basis to integrate the voices of the customers into the products and services they offer and to track their performance with regard to customer satisfaction. Generally, they possess reasonably high level of organizational and market knowledge. Their ability to generate market intelligence is demonstrated.

Market intelligence dissemination in both the KCRC and ISL is rapid and multidirectional. As these organizations are highly dependent upon their daily interactions with customers, they rely on the efficiency and speed of their communication systems to ensure a timely response to customer needs and requirements within the marketplace. The emphasis on the multidirectionality of information flow is apparent in both the KCRC and the ISL. Furthermore, there is a stress on facilitating channels of communication between various functions in the two organizations. Horizontal diffusion of market intelligence is also evidenced in both organizations. In addition, market intelligence is not confined to the upper management level or distributed vertically in an ad hoc manner in both the organizations. Rather, formal and systematic methods are employed for dissemination of market intelligence to all levels within the organizations, for example, meetings, use of newsletters and various publications are common.

Responsiveness to market intelligence in the two organizations is also high. In addition to customer-focused responses, they attempt to improve conditions in their current (future), competitive, technological, regulatory, and economic environments. They are able to formulate and implement company strategies quickly, efficiently and successfully. Decision and strategy design in KCRC and ISL appear to be largely
based on objective assessments of market conditions, subjective and judgmental decisions are rarely employed. Furthermore, they continually monitor their business outcomes and assess the effectiveness and, if necessary, readjust their strategies in response to the market changes.

In both cases, they are convinced that quality improvement and market orientation are essential and influential in their business competition. They are proactive and ready to respond effectively to the customer needs and the market changes. Both organizations achieve reasonably high level of organizational performance in terms of customer and employee satisfaction. Their improvement in productivity and market performance are also obvious. They both manage to satisfy various stakeholders in the society in addition to customers and employees, for example, shareholders and the general publics.

6.2.4 AEL

Founded in 1961, Associated Engineering Limited (AEL) is an engineering company involved in a diversified range of business activities. Employing over 700 employees, the business areas of AEL include repair and maintenance work for airport ground service equipment, automobile engineering, structural steelworks and space frame construction, mechanical handling equipment, marketing of industrial products, and environmental engineering. The company is structured into three divisions, namely engineering and contracting division, operations division, and finance and administration division. The first two mentioned divisions of the company operate quality management system in compliance with ISO standards and they achieved their ISO certifications in 1995 and 1996 respectively. The focus of this case is on the engineering and contracting division of the company, referred later as contracting division, and the following discussions center around that division.

The contracting division of AEL provides a variety of services including design, supply and installation of structural steelworks, material and mechanical handling, lifting system and equipment, space frame system, mechanical plant and equipment, and refuse disposal system. The quality initiative of the division began in 1992 because of the stipulation of the Housing Authority (a branch of government
responsible for public housing) that from 31 March 1993 on, all the contractors must be certified to ISO 9001 or 9002 to be eligible for construction work contracted out by the Authority. In order to satisfy the quality requirement of the Authority for project tender, i.e. ISO certification, AEL started implementing quality management system in the contracting division. The quality management system of the contracting division was certified to ISO 9001 in October 1995 and the system applies to all the contracting projects carried out by the division.

The mission statement of AEL is “Dedication to excellence”. The quality management system of the contracting division links to the company mission in its quality policy. It requires the division to provide quality products and services that meet the contract services, quality, schedule, cost and safety requirements. AEL has a separate quality assurance department that looks after all the quality related issues in the company including preparation of work instruction manuals and documentation of work procedures. The department has three staff and a manager. Reporting directly to the division directors, the manager of the quality assurance department is the most senior person responsible for quality matters in the company. The role of the quality assurance department is to ensure that the certified divisions in the company operate their quality management systems in full compliance with the ISO standards. The department also provides access to all employees of the divisions concerned for the quality manuals and instructions.

**Total Quality Orientation in the Contracting Division of AEL.**

In pursuit of excellence, AEL invests in its staff by providing them training programs throughout their services in the company. AEL believes that an investment in its staff pays off for everyone including the staff, the company and the customers. Two types of training are provided in AEL-internal and external training. Internal training is organized by the quality assurance department and the content of the training centers around general quality management skills, for examples, quality planning, documentation procedures, and internal audits. The department also offers some kinds of general on-the-job skills to the contracting division, for example, sampling for inspection. For technical and specific on-the-job skills, employees are sent out for training programs organized by outside organizations, for example, Hong Kong
Productivity Council and quality management consultants. To monitor the effectiveness of the training provided, perceptual and personal judgment is used to assess the internal training provided to the staff by their immediate supervisors. No evaluation is made for the external training provided as the company does not have the knowledge to judge the value of the training provided by external bodies.

To reach for the key performance objectives of the division, the methods employed on the employee side are persuasion and a treat to dinner. The staff are educated on the ISO 9000 quality management system and the benefits of quality improvement. Some staff will be selected by their immediate supervisors for a dinner if they are deemed to have achieved performance improvements. On the customer side, the staff are encouraged to continuously listen to the customers for the standards and requirements of the projects being carried out for them. As the business nature of the contracting division is on a contract or a project basis, market research is not practiced to foresee the needs of the customers. Quality and standard requirements are specified and discussed with the customers upon award of contract.

The division is dependent on quality inspection to ensure the quality of incoming construction materials. The decision criteria for material purchase in the division are based on price, availability, and specification. On some occasions, the division sources materials from ISO-certified suppliers at the request of customers. Feedback is given to the suppliers if the incoming materials do not conform to the specifications or defects are found. However, there is no form of joint development or long-term relationship cultivation between the division and its suppliers to ensure the quality of the incoming materials and to improve the responsibility and capability of the suppliers. Supplier selection in the division is mostly on a competitive basis with respect to price, availability and specification.

Neither quality costing system nor any performance index is used in the division to facilitate quality improvement. The division only follows strictly the quality manual in ISO 9002 system to aid quality improvement. Other reasons for not adopting quality costing or performance indicators to enhance quality improvement is the lack of resources (e.g. knowledge, time, manpower) and the lack of management support (top management in AEL would rather use the resources to obtain ISO certifications
in other divisions or work processes). Skills such as benchmarking is not practiced in the division for performance improvement, thought benchmarking has been widely applied in the business world to identify best practice for performance improvement. The division considers that the use of benchmarking is impractical in the construction industry as there is no universally accepted standard in the industry to benchmark. The environment for such practice is considered unfavorable in the industry as the job nature is project specific and each project involves a wide variety of work processes and uncertainty. Quality improvement in the division depends on the experience and on-site decisions of project managers for any quality issues arisen.

As a part of ISO requirements, the division assesses the needs of employees for quality education and training. Department heads in the division take the responsibility for evaluation of the training and education needs in their departments. The needs identified are communicated to the quality assurance department to organize training. However, there is no regular training and education need assessment in the division and the training provided are mostly concerned with improvement of specific on-the-job skills. In addition, the division seldom interacts with outside groups for mutual benefits of quality improvement. The division feels that it is difficult and worthless to exchange quality improvement information with outside bodies as job nature in the industry varies with different projects. It is considered to be of little use to learn skills from others for project types not undertaken by the division.

To enhance the confidence of the customers on the products and services provided, the method employed by the division is in full compliance with the ISO quality management system requirements. On the other hand, the division evaluates customer satisfaction in terms of the number of customer complaints received. It strives to improve customer satisfaction level by conformance to contract requirements specified in each project. Because of project-based job nature, the division takes no action to determine customer satisfaction (e.g. need analysis of customers) and considers it sufficient to satisfy customers by fully meeting the contract specified requirements.
Regarding external interface management, the division recognizes its social responsibility in the form of providing a safe environment for each project undertaken both for its employees and the public. In this connection, AEL has appointed professional safety staff to take care of all matters pertaining to industrial safety of the whole company including the division. An occupational safety and health committee has also been set up in the company to regularly review its safety practices, rules, and polices and to make recommendations for improvement for the whole company. In addition, the division pays attention to industry trend for the latest technology and materials used to foresee the future customer requirements. This is conducted through informal channels (e.g. dialogues with customers, industry magazines, exhibitions). Venture team (including sales engineers, civil engineers, project managers and supervisors ) is also adopted in the division to ensure that each project undertaken conforms to the requirements specified by the customers.

In the division, managers tend not to take active leadership in quality improvement. They perceive that promotion of quality issues in the division is not their responsibility. Rather, they consider that it is the responsibility of the quality assurance department in the company. Moreover, the concern of the managers in the division does not lie in quality related matters. Their major concern is on the profit and loss in their division, i.e. new contract or project creation, on time project completion, as the divisional performance is evaluated by the company on the basis of profit and loss, not on quality improvement. As a result, employee participation is not emphasized for achievement of the quality and performance objectives in the division. Instead, new contract creation, profit making, and on-time project completion are on the higher priority list of the performance objectives in the division.

At the company level, the major concern of the top management is also on business volume and profit creation. It is a belief in the company that quality management system such as the ISO system is just the prerequisite to survive in the construction industry (e.g. meet the tender requirement of the Housing Authority). Expertise, facilities and equipment, reputation, and past job reference of the company are deemed as the more important determinants of company’s success. In these regards, quality management is not put on a high priority list in the division. Quality management is only practiced according to the ISO standard requirements that has to
be reviewed periodically by internal audit and annually by external certifying body. Except maintaining the existing ISO 9002 system, the division does not have any long-term plan for quality improvement. It embraces business growth in terms of volume and profit as its long-term goal.

As for the team work structure for quality improvement, it is rather hierarchical in the division. There is no quality circle or quality improvement team in the division. Quality problems found by the on-site workers have to be reported to their immediate supervisors or management for ways of improvement. If the problem remains unsolved, it continues to be reported upward at the higher management level, or to the quality assurance department. On the same vein, suggestions for quality improvement are communicated down through the hierarchy in the division to the on-site employees. Furthermore, work in the division is organized according to specialization of the departmental functions and the project managers take the responsibility of overseeing the projects undertaken by the division.

Except the quality planning in ISO documentation, there is no concrete short term plan or strategy focused on quality. The short-term goals of the division focus on business and profit generation and reduction in customer complaints. Because of the contract-based job nature for the projects undertaken which are non repetitive and varied with each project, service and process evaluation is therefore not carried out in the division. The division only manages the quality related data and information, and documents the work procedures as required by the ISO quality policy guidelines.

The division feels that the concern for quality in the construction industry is relatively low. It is believed that adoption of quality management system such as ISO system in the industry is for the sake of meeting the Housing Authority’s requirement of ISO certification for public construction work tender. Quality culture is also not perceived to be strong in the division because of the influence of low quality awareness in the industry and the lack of ‘wholehearted’ top management support for quality improvement, though management support is stipulated in its ISO quality policy. However, the division considers quality management beneficial for the division and the construction industry in the long run as it helps to standardize a wide variety of work procedures involved in each project undertaken.
Market Orientation in the Contracting Division of AEL

There is no formal marketing department or marketing staff in the division. Marketing department is found at the company level. Sales engineers in the division take the major responsibility of communicating with the customers. As the job nature in the division is project-based, the division meets customers only when the division undertakes projects for them, and upon award of new contract. Market research or need analysis of the customers is therefore not performed in the division. Conformance to customer specifications and requirements as specified in the contract for each project undertaken is considered sufficient for customer satisfaction. No staff including the senior management in the division feels the need to conduct market research in any types to discern customer needs. However, the division is quite sensitive to the market environments that might affect its business including technology level in the industry, government regulations, and competitors' price level. The division observes those environmental forces through channels such as magazines in the industry, government publications, attendance in public tender. A monthly departmental meeting in the division is also held to discuss issues related to workload, project progress, forecast of profit and loss for projects, customer complaints, and the environmental changes that may affect project completion.

The marketing department at the company level has two functions. Internally, it communicates to all the employees about the company's developments and activities in the forms of newsletters and notices. Externally, it promotes company image by preparation of company brochures, advertisements, and company job reference. Cultivation of relationships between the customers and the division, review of services and projects undertaken by the company are the activities not within the scope of the marketing department. They are to be taken care of by other departments concerned in the company. Because of the project-based job nature, there is no regular departmental meetings in the division to discuss customer or market related issues. The division believes in conformance to project requirements and the company's capability to meet project specifications as sufficient for being responsive to the market needs.
Organizational Performance in the Contracting Division of AEL

It is perceived that implementation of quality management in the division does not bring benefits to employees. According to an engineer, quality management only means more workload for them in terms of paper work required by the ISO standards. Efforts for quality improvement are less recognized and rewarded than efforts in keeping the project work profitable and completed on time. For market performance, a quality management is not considered useful for generating new business. Implementation of quality management system such as ISO series makes no difference between companies as ISO certification has become a perquisite for existence in the construction industry in Hong Kong. The division does not see any link between improvement in business volume and quality management. However, the benefits of a quality management system are recognized by the division including clear work procedures and increase in customer confidence.

As the division does not adopt any quality costing system and performance indices for evaluation of performance. Productivity performance of the division cannot be assessed from real figures such as capital-output ratio, labor-output ratio, in this case study. The same also applies to the evaluation of the societal performance of the division. No significant impact, both positive and negative, was perceived to have been made by the division to the society. However, the division endeavors to make a safe and healthy working environment to employees.

Key Issues of the Case Study

The quality management system implemented in the division tends to be program oriented rather than process-oriented. The system is developed in accordance with the ISO standards. It seems to be a "quick fix" for the quality needs of the division (e.g. meet the Housing Authority requirement of being ISO-certified for public work tender), instead of being a continuous process for performance improvement. However, the management system provides an opportunity for the company to standardize the work procedures and to reduce work variations.
The division adopts quality management system because of the Housing Authority’s requirement of ISO certification for public construction work tender. The division tends to focus on short-term business results and not wholeheartedly invests in quality improvement. Quality management is confined to maintenance of the ISO certification, continuous improvement of business process is not obvious in the division. Market orientation is also low in the division with respect to market intelligence generation, dissemination, and responsiveness to it. Management places quality issues at a lower priority than short-term business outcomes, employees are not motivated and empowered to pursue quality improvement. As a result, company-wide quality culture is restricted in the division. The reasons for these include the lack of top management commitment and involvement (especially for short-term business results rather than long-term benefits resulted from quality improvement), incompetent organizational structures and systems for quality improvement (especially for employee motivation and empowerment), and the lack of continuous process improvement focus. The division appears to have made a first step in quality management, but simply has not invested and fully supported it to play a larger management role.

6.2.5 BYME

BYME engineering (HK) limited is a specialist contractor for multi-disciplinary mechanical and electrical projects. Established in 1990, BYME is a joint venture between Young’s Engineering Holdings Company in Hong Kong and Dragages et Travaux Publics (HK) Limited, a member of the BOUYGUES Group in France. The company is specialized in air-conditioning and ventilation, electrical installation, fire services, plumbing and drainage works, with a range of services stretching from conceptual design to co-ordination, detail design development, supply and installation, start-up, testing and commissioning, and maintenance. With employee establishment of around 100 and an annual turnover of HK$ 500 million, the company has the technical and financial capacity to execute projects with a value exceeding several hundred million Hong Kong dollars. Headed by the general manager, the company is organized into four departments and several project teams. The four organizational departments are engineering, administration, quantity survey, and
quality assurance. Managers in each project team directly report to the general manager of the company.

The quality initiative of BYME was started in 1993 because of the government’s stipulation that contracting companies must be accredited to ISO quality management system to be eligible for tender of public construction work. Another impetus for quality management in BYME was the pressure from its parent company in France, which expects its subsidiary in Hong Kong to have a quality management system similar to its French parent. In 1993, BYME set up a quality assurance department to draft quality management system and to look after all the quality related issues. In 1997, the quality management system of the company was certified to ISO 9002 standard and the system is applicable to all the project work undertaken by the company.

BYME has formulated no mission statement and the company uses the quality policy statement in its ISO 9002 quality management system as the guiding principles for quality improvement. Stated in the policy, BYME is committed to quality and satisfying its clients through its own initiatives, experience, capabilities, expertise and resources applied to its building services activities. To achieve and maintain this objective, the company strives to:

1) establish and implement a documented quality management system based upon the quality standard of ISO 9000 series,
2) provide continuous improvement on quality management system via assessment and periodical review.

It is also stated in the policy that quality assurance is not the sole responsibility of the quality assurance department. The measure of success of the quality management system is its recognition by all BYME’s staff and their compliance with the quality system requirements throughout all stages from supply and installation through to serving.

The quality assurance department in BYME has two staff and the major responsibility of the department is to oversee implementation of ISO 9002 standard in the company.
modify work procedures as required, and arrange quality related training for other staff members of the company. Due to the lack of resources in the department, quality management related activities which involve job specific expertise and significant manpower, for example, quality control in work processes, monitoring quality of incoming materials, collection and analysis of quality related data are left to other staff members such as engineers in the company.

**Total Quality Orientation in BYME**

Two types of training are provided in BYME to enhance staff competence, quality training and technical training. The aims of quality training are to educate its staff in the importance of quality management and to give them knowledge of ISO quality management system environment with respect to quality manual, work procedures and instructions, system maintenance. The training provided is conducted by the quality assurance department that covers all employees of the company. To ensure awareness of quality management, every member of the company is distributed a copy of the quality policy and provided with an access to the quality manual. Technical training is organized by the project managers, senior engineers in the company and experts from its parent company, Young’s Engineering and Dragages. The staff are trained in the use of the latest techniques, planning and programming, testing and commissioning, and other specific technologies in the field. However, the training provided is limited to the engineering related staff. The company has no mechanisms such as participant survey, and periodical management review to assess the effectiveness of the training provided due to the lack of knowledge and experience for training evaluation. BYME monitors it only through the ISO internal audit procedure that helps to know how well the employees understand and follow the work procedures.

As each project undertaken by BYME involves risks such as delayed completion and increase material cost, the company is not confident to profit from each project and therefore offers no incentive to motivate employee involvement in quality improvement. The company considers that project completion within scheduled time should take the first priority. The way by which BYME encourages employee participation for quality improvement is to give them the quality knowledge and
concept. As on-time project completion takes a high priority in BYME, engineers in
some occasions might bypass certain work procedures if the project deadline is
imminent in order to meet the scheduled project completion time.

On the customer side, the company tends to be less proactive in improvement of
customer relations and satisfaction. As the nature of customer relationship with
BYME is on contract basis, customer relationship is cultivated upon award of contract
from project tender and is terminated after project completion. The methods employed
in BYME to improve customer relations are to conform to customer requirements as
specified in the contract and to serve their extra needs if the additional works do not
significantly impact on the profit margin of the project. The company does not have a
department to handle customer relations and to centralize and coordinate customer
relations improvement activities. The engineering staff take the major responsibility
for customer relations development, usually in the forms of communication and
personal relationships with the customers.

On the supplier side, BYME evaluates its suppliers on factors such as price, quality,
delivery schedule. However, it takes price as the most important factor for material
purchase unless specified in the contract for certain material types. Long-term
repeated purchase and joint development efforts with suppliers are therefore not
practiced in the company. BYME assures the quality of incoming materials by
specifying its requirements to suppliers and quality inspection. On some occasions,
BYME visits suppliers at the request of customers to ensure quality of materials for
the major component parts of the project carried out for them.

Regarding communication of quality improvement information, the company employs
no specific quality costing system to facilitate quality improvement. Most of the
projects undertaken by BYME are divided into parts that are to be subcontracted out.
As the number of subcontractors involved is large and the nature of each project
undertaken is different, BYME considers it difficult and complicated to adopt quality
costing system for quality control. To assess quality improvement, BYME employs
other set of criteria such as on-time project completion, conformance to customer
specifications, profit and loss to evaluate its performance on each project undertaken.
In addition to the criteria set, attitude of subcontractors and their documentation
procedures are applied to assess the performance of subcontractors. On the other hand, improvement tool such as benchmarking is not adopted in the company for performance improvement. It is not practiced because of the lack of experience and best practice examples to benchmark in the industry. In addition, the company considers benchmarking impractical as the nature of work in each project vary significantly. BYME has no intention to become the best practice company in the industry. The company is satisfied with its performance only if the project work undertaken conformed to the contract requirements and completed within scheduled time. Externally, except personal interactions of the engineers with other engineering firms, BYME does not formally interact with outside organizations for the mutual benefits of quality improvement because of the lack of time and resources to do so.

BYME considers that fulfillment of contract requirements is already sufficient to satisfy customers. It also believes that the ISO certification obtained helps to build trust and confidence in customers for its products and services. In this regard, no attempt is made in the company to evaluate and improve customer satisfaction. Another reason for this is the lack of manpower, resources and experience to determine customer satisfaction by means such as market research and customer surveys. However, BYME follows up customers for their project requirements and work procedures by attending their project meetings and company visits. Although not specified in the ISO requirements, BYME recognizes its social responsibility with respect to provision of safe working environment for both its employees and the public.

In BYME, managers are not active to promote quality issues as their major concern is profit and loss of each project and on-time project completion. Commitment of top management for quality improvement is also limited. Their involvement in quality related issues is only visible in staff meetings. The management of BYME is more interested in profit and loss related issues and project completion that should take the highest priority in the company. Other than the maintenance of ISO certification, no extra resource is allocated for quality improvement in the company. As a result, BYME does not formulate any long-term plan for quality improvement. Employee satisfaction and reward for employee achievements in quality improvement are not recognized in the company. Continuous programs for improvement of process such as
process capability study, analyses of process performance data are not carried out in BYME.

Team work structure for quality improvement is rather hierarchical and work is organized on departmental basis in BYME. There are some ad hoc meetings within each department for internal issues that are not regularly organized and are called upon only when needed. Because of the project and technical specific job nature, BYME does not consider cross-functional meeting crucial for the project work. The company believes that issues related to the project undertaken can only be solved by the project teams. Team work structure for quality improvement such as cross functional improvement teams is therefore not evident in BYME. Quality improvement activities and quality circles are also not promoted in the company because of the lack of resources and management support.

As BYME has started quality management for a short period of time, the company recognizes that its quality management system is not yet up to the standard of high level and still has room for improvement. The company has a short-term goal for maintenance and improvement of the existing ISO quality management system. With the system, BYME expects to secure more businesses and to improve the work processes carried out by the company.

The company has no centralized system to manage data and information to support quality improvement. The quality assurance department takes the responsibility to maintain all the documentation as required in the ISO 9002 standard. Data and information management in other aspects such as customer and market information are left to the responsibility of the departments and engineers concerned. As there is no formal procedure to govern data and information management in the company, data and information update, review and access are at the discretion of the responsible departments and engineers.

BYME admits that quality culture in the company is not strong and company-wide because of its heavy emphasis that put on-time project completion and profitability at the top of management agenda. Among others, the lack of top management support and resources committed to quality improvement are the major factors for the low
level of quality management implementation in the company. To a certain extent, BYME recognizes the usefulness of the existing ISO 9002 quality management system. It provides a clear guideline for the work processes carried out by the company that makes it easier for employees to follow and therefore reduces variations and defections in the project work. The company believes that its quality management system can be improved with more management support, better management systems especially training and motivation for employee participation, and the wholehearted continuous improvement focus that has been stated in its quality policy.

**Market Orientation in BYME**

As the business nature of BYME is project based, the company does not know its customers until award of contracts from project tender. BYME considers that it is not economical to visit and meet potential customers that have no contract work with the company. Meetings with customers are only arranged to understand their needs and requirements after entering a contract with them and on a needed basis. It organizes meetings with the customers when they require. However, the company does conduct some types of in-house market research to collect information about the market concerning the price trend, technology, and service level in the industry. Nevertheless, those market information collection activities are not formally organized in the company. Market information generation in the company is dependent on knowledge, experience, expertise and judgment of the engineers and their personal relationships developed with outside organizations.

Each project team in the company holds some meetings for their team members to discuss issues related to the projects being undertaken. Those meetings are arranged occasionally and the project team members are sometime disseminated with the market information generated at that opportunity. BYME organizes no separate meeting to discuss market related issues. As there are no cross functional meetings and other communication channels such as newsletters, and notices to disseminate market information, non-engineering staff are rarely informed of the market changes and situation. Access to market intelligence seems to be limited to the engineering staff in the company.
BYME tends to be reactive to customer requirements and market changes. The company reacts to the customer requests only when a customer complaint is received. It seems that BYME is not proactive enough to detect market changes, determine customer satisfaction, and respond to customer requirements. The company believes that fulfillment of contract requirements as specified is sufficient for satisfying customers.

Organizational Performance in BYME

The company sees the benefits of quality management in terms of the training provided which help to sharpen the skills, both technical and quality, required by the staff to improve job performance. The employees of the company are aware of the concepts of quality and the associated benefits. However, improvement with respect to employee satisfaction is not evident in the company. The employees perceive that quality management means more documentation workload for them and the company provides no incentive and motivation for their quality improvement efforts.

As BYME undertakes a wide variety of projects that are of different nature, the company does not measure the process improvement of each project as it is deemed difficult by the company to compare and judge. The same also applies to its productivity measure. The company employs no such means as performance indices to gauge its performance on productivity with respect to efficiency of material and labor usage, wastage reduction, capital utilization and so on. However, BYME is aware of its social responsibility and strives to provide a safe working environment for both its employees and the public in all its construction work undertaken.

Key Issues of the Case Study

The situation at BYME is similar to the other organization in the low performing group, i.e. AEL, in the qualitative research. Quality improvement and market orientation are not considered critical to their business. Quality management affects them because implementation of quality management system such as the ISO 9000 series is the prerequisite for tender of public construction work. The need for quality management has only been recently recognized in BYME for the reasons of catching
up with many of its competitors in the construction industry and the ISO management system requirement of the Housing Authority. Quality management system is only used to comply with the ISO standard requirements, and is rarely used to mobilize staff for continuous improvement. In almost every instance, quality management is used at the minimal acceptable level, i.e. maintaining the ISO certified status, rarely using it to integrate organizational functions for continuous improvement. Because of the project-based job nature, the company is not eager to cultivate long-term relationships with the customers. The ability to meet project schedule and customer specifications is the ultimate quality goal of BYME. As a result, market orientation level in BYME tends to be low.

Though quality management has been widely accepted and practiced by many firms in the construction industry of Hong Kong, it is deemed impractical by BYME given the lack of quality management knowledge and culture in the industry. The large number of subcontractors and grass root labor involved makes it difficult for BYME to engage them in quality management as they lack the knowledge to effectively adopt quality management. Furthermore, BYME considers the cost of pursuing quality management is not warranted given the varied project nature and the risk level involved.

While BYME has implemented quality management system, the lack of top management support has constrained the resources to further develop quality management to such an extent that only the most rudimentary of system is currently in place. Inflexible and rigid organizational structures and systems such as employee motivation and empowerment, lack of long-term focus on continuous improvement are also the major reasons for the low level of quality management and marketing practice in BYME.

6.2.6 Summary of Cases with Low Level of TQOR/MARKOR Alignment

AEL and BYME have only recently obtained ISO 9002 certification. Both of them have managed to implement quality management system such as the ISO 9000 series. Although their ISO management systems guide them on the application of quality management, their work plans seem to be not focused on customers and not based on
continuous improvement. Customer feedback is not regularly monitored and work results are not audited effectively. Quality management activities of the two companies tend to be restricted to “specification matching” rather than “customer satisfaction striving”. Quality management systems employed in the two organizations, to a great extent, are due to customer pressure, i.e. stipulation of the Housing Authority for ISO certification for tender of public construction work. Perhaps, it is the contextual factor, i.e. the norm of construction industry in Hong Kong, affects their quality management practice as they both consider conforming to specifications as satisfying customers, i.e. conforming to contractual agreements. However, they recognize that quality management plays a positive role in standardizing work procedures and therefore enhancing customer confidence in their offerings.

Employees in both the companies appear not keen on quality improvement because of the lack of management support, motivation, and empowerment. Quality management activities are carried out at the direction of their management, not at the initiation of the employees and their needs. Though the employees are provided with training in quality management, they are not eager to pursue quality improvement due to the lack of motivation from the management and the fact that quality issues are put at a lower priority in the management agenda of both the AEL and the BYME. Supervisory competence, concern for quality, team working environment, working relationships among employees in terms of reward and compensation systems, are not obvious in both the companies. Commitment and involvement of both the middle and top management in quality management are not evident. The majority of efforts observed in the two companies mostly center around developing existing operations in a marginal way to meet customer needs, but to a large extent, maintain their ISO-certified status.

Both AEL and BYME exhibit a low degree of market orientation in terms of market intelligence generation, dissemination, and responsiveness to it. The scope of market intelligence generation of the two companies is narrow and confined only to the existing customers. They do not invest and employ any means such as customer surveys to determine the needs of their customers until award of new contract by customers. The two organizations are not sophisticated in dissemination of market
intelligence that is slow and unidirectional. Market intelligence in both the AEL and BYME appear to be disseminated in a restricted way, i.e. market intelligence only shared within functions, and mostly at the discretion of management. Very often, market intelligence in both the organizations is disseminated through informal channels such as personal dialogues among engineers because they are the few in the two organizations that are actively involved in matching customer specifications. However, the engineers are not anxious to keep members of other functions in their organizations (e.g. marketing, human resources, manufacturing, finance) informed of the progress and quality standards of the project work, even though they are themselves highly reliant upon these functional areas for advice, resources and information. Although top and middle managers regularly hold meetings to formulate policies and solve problems, the results are not always made known to the shopfloor workers. Customer and market related information and the performance results are not effectively disseminated to all the working units.

Both the organizations display low responsiveness to market intelligence and tend to focus their responses on their current customers only. Their responses to the market are largely based on their subjective judgments and tend not to take into account of the influences imposed by their broader external environments. In short, they are often reacting to changes taking place in the markets, not having sufficient market knowledge to be able to consistently design and implement strategies that are proactive and lacking a real market orientation and focus.

6.3 Cross Case Analysis

The four cases presented in this chapter have examined organizations with different degree of TQOR/MARKOR alignment including organizations with high and low level of TQOR/MARKOR alignment respectively. The cases selected also display different degree of organizational performance that go in the same directions with the TQOR/MARKOR alignment in organizations. This section compiles the insights gained from the four case sites with regard to TQM/marketing management interface and the resulting organizational performance. The followings detail responses to the questions raised in Chapter three that were not completely addressed by the survey research in the quantitative phase of the study.
6.3.1 Total Quality Orientation and Organizational Performance

It was found during the quantitative phase of the study that the surveyed organizations share a belief that quality management should be an important strategic objective of their companies, as indicated by their aggregated score in the total quality orientation scale (average score of 3.49, see Table 5.13). Most of them showed a medium to high level of total quality orientation and only a few displayed low level of total quality orientation (see Table 5.14). The findings of the survey research also suggested that total quality orientation alone does not appear to have a direct and positive affect on organizational performance. The performance impact of total quality orientation is more effective when driven through market orientation (see Figure 5.7).

Though the degree of total quality orientation differs among the surveyed organizations and their industry types, it was learned in the qualitative research that both the high and low performing groups consider that quality management is necessary to achieve better performance, although it is not practiced properly in the latter group. Table 6.4 provides a summary of the results concerning the level of total quality orientation of the four cases, together with the lessons learned from each of the case studies conducted.

For the high performing group, KCRC and ISL, quality management provides them with a unifying focus and integrates efforts of all the employees, from top management to line staff, to continuously improve their every business operation for customer satisfaction. Quality management in the high performing group helps to assure customer focus, gives employees clear roles for quality improvement, and facilitates continuous improvement. All these are reflected in their organizational visions, missions, and the resulting organizational performance; increased customer and employee satisfaction, improved market performance and productivity level.

Although it is not practiced well in the low performing group, both AEL and BYME recognize and admit the benefits of quality management. It gives them a well-defined and formulated quality policy that contributes to standardized work procedures and reduced job variations. Consistent with the findings in the survey research that quality
management alone does not lead to performance improvement, the performance impact of quality improvement has to be driven through a market focus. The quality management systems of AEL and BYME appear to be inward-focused and concerned with internal documentation and work procedures. Quality management practices targeted at the needs and requirements of the market are not obvious in both the companies. It is possible that the contextual factor, i.e. the type of industry they belong to, affects the levels of quality management implementation in their organizations as they both perceive that the concern for quality management in the industry is low, i.e. implementation of quality management systems such as the ISO series is for the sake of meeting the customer requirement of ISO-certified status for project tender. Since the business nature of the construction industry is job- or project-based, fulfillment of contractual agreements is generally considered as satisfying customers in the construction industry. Though AEL and BYME have implemented quality management systems in compliance with the ISO standards, atmosphere for quality management practices such as clear quality values and organization-wide efforts have not yet been created. Top management support is confined to maintenance of their existing systems. Employee involvement in planning, decision making, and formulation of company strategy regarding quality improvement is also limited. Quality management in AEL and BYME is rendered into an “inward focused program” rather than an “outward-looking continuous improvement process”. Indeed, the lack of a positive relationship between total quality orientation and organizational performance in the low performing cases would imply that quality management should not simply focus on documentation and internal improvement for the sake of meeting standard requirements such as those in the ISO 9000 series. Rather, it may be appropriate to be market sensitive and let market orientation drive the performance impact of quality management.
<table>
<thead>
<tr>
<th>Variables (TQOR)</th>
<th>KCRC</th>
<th>ISL</th>
<th>AEL</th>
<th>BYME</th>
</tr>
</thead>
<tbody>
<tr>
<td>People and Customer Management</td>
<td>Comprehensive system; Regular assessment with input from customers and employees for improvement</td>
<td>Competent system; Periodical evaluation conducted with customers and employees for improvement</td>
<td>Insufficient system; Lack of mechanisms to understand the needs of employees and customer satisfaction</td>
<td>Ineffective system; Lack of mechanisms to understand the needs of employees; Reactive in improvement of customer relations and satisfaction</td>
</tr>
<tr>
<td>Lessons Learned from the Case Study</td>
<td>Integration of voices of customers and employees into the management system</td>
<td>Improvement of customer satisfaction; Motivation of employee for improvement</td>
<td>Market needs and interests of employees not well connected to improvement actions</td>
<td>Market needs and interests of employees less related to improvement actions</td>
</tr>
<tr>
<td>Supplier Partnership</td>
<td>Long-term partnership cultivation with suppliers</td>
<td>Long-term partnership developed for a few suppliers</td>
<td>Focus on quality inspection; Supplier selection based on price, availability, and specification</td>
<td>Focus on quality inspection: Supplier selection based on price, quality, and delivery schedule</td>
</tr>
<tr>
<td>Lessons Learned from the Case Study</td>
<td>Supplier quality is ensured</td>
<td>Quality of incoming material is ensured</td>
<td>Quality management limited to inspection</td>
<td>Quality management confined to inspection</td>
</tr>
<tr>
<td>Communication of Improvement Information</td>
<td>Use of performance indicators and benchmarking to aid improvement; Interactions with outside organizations</td>
<td>Use of performance indicators, benchmarking, ongoing assessment, and two ways communication to assist improvement; Interactions with outside organizations</td>
<td>Focus on ISO 9002 system; Improvement depends on experience and on-site decisions of engineers</td>
<td>Use of criteria such as on-time project completion, conformance to customer specifications, and profit and loss to evaluate performance</td>
</tr>
<tr>
<td>Lessons Learned from the Case Study</td>
<td>Ways adopted to learn improvement progress</td>
<td>Methods employed to identify and monitor areas for improvement</td>
<td>Improvement restricted to the ISO standards</td>
<td>Improvement confined to internal aspects</td>
</tr>
<tr>
<td>Customer Satisfaction Orientation</td>
<td>Build trust and confidence by performance pledges and evaluation of customer satisfaction</td>
<td>Establish trust and confidence by giving individualized services</td>
<td>Enhance confidence of customers by full compliance with ISO standards</td>
<td>Develop trust and confidence in customers by maintenance of the existing ISO 9002 system</td>
</tr>
<tr>
<td>Lessons Learned from the Case Study</td>
<td>Customer satisfaction via continuous evaluation and improvement</td>
<td>Customer satisfaction via individualized services, continuous assessment and improvement</td>
<td>Customer satisfaction via fulfillment of contractual agreements</td>
<td>Customer satisfaction via fulfillment of contractual agreements</td>
</tr>
</tbody>
</table>

Table 6.4 Comparison of Cases in Total Quality Orientation
<table>
<thead>
<tr>
<th>Variables (TQOR)</th>
<th>KCRC</th>
<th>ISL</th>
<th>AEL</th>
<th>BYME</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Interface</strong></td>
<td><strong>Management</strong></td>
<td><strong>Management</strong></td>
<td><strong>Management</strong></td>
<td><strong>Management</strong></td>
</tr>
<tr>
<td></td>
<td>Awareness of responsibility to customers, employees and the environment</td>
<td>Emphasis on environmental friendliness and the interests of customers and employees; Participation in community activities</td>
<td>Awareness of social responsibility in provision of a safe working environment for both its employees and the public; Attention to industry trend to foresee customer requirements</td>
<td>Recognition of social responsibility by providing a safe working environment for both its employees and the public</td>
</tr>
<tr>
<td><strong>Lessons Learned</strong></td>
<td>Actions taken for the interests of different stakeholders in improvement process</td>
<td>Actions taken for the benefits of multiple stakeholders in improvement process</td>
<td>External management interface focused on compliance with ISO standards</td>
<td>External management interface focused on compliance with ISO standards</td>
</tr>
<tr>
<td>from the Case Study</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Strategic Quality</strong></td>
<td><strong>Management</strong></td>
<td><strong>Management</strong></td>
<td><strong>Management</strong></td>
<td><strong>Management</strong></td>
</tr>
<tr>
<td></td>
<td>Effective management leadership; Encouragement of employee participation</td>
<td>Active management leadership; Employees are encouraged to participate</td>
<td>Management focuses on short-term business results; Employees not motivated to participate; Quality improvement on a lower performance objective</td>
<td>Management focuses on short-term business results; Employee satisfaction and rewards not recognized</td>
</tr>
<tr>
<td><strong>Lessons Learned</strong></td>
<td>Ways to ensure organization-wide improvement</td>
<td>Methods for reinforcement of quality value and company-wide improvement efforts within and outside the company</td>
<td>Lack of management commitment for quality improvement; Focus on short-term business results</td>
<td>Insufficient management support for quality improvement; Short-term business results oriented</td>
</tr>
<tr>
<td>from the Case Study</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Team Work</strong></td>
<td><strong>Structure for Improvement</strong></td>
<td><strong>Structure for Improvement</strong></td>
<td><strong>Structure for Improvement</strong></td>
<td><strong>Structure for Improvement</strong></td>
</tr>
<tr>
<td></td>
<td>Process owner appointed for process improvement across functions</td>
<td>Team leader appointed for process improvement across functions</td>
<td>Hierarchical; Functionalized; Improvement actions go through many layers before being implemented</td>
<td>Hierarchical; Departmentalized; Cross-functional team improvement not evident</td>
</tr>
<tr>
<td><strong>Lessons Learned</strong></td>
<td>Flexible team work structure; Process improvement not limited to business functions</td>
<td>Flexible team work structure; Process improvement not confined to functional areas</td>
<td>Process improvement restricted by functional practice</td>
<td>Process improvement limited by functional practice</td>
</tr>
<tr>
<td>from the Case Study</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6.4 Comparison of Cases in Total Quality Orientation (Cont'd)
<table>
<thead>
<tr>
<th>Variables (TQOR)</th>
<th>KCRC</th>
<th>ISL</th>
<th>AEL</th>
<th>BYME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Quality Planning</td>
<td>Short-term plans developed, reviewed according to customer requirements, company capabilities and performance outcomes</td>
<td>Short-terms plans formulated, adjusted according to customer requirements and environmental situations</td>
<td>No short-term plan or strategy focused on quality and improvement except maintenance of ISO-certified status</td>
<td>Short-term plan focused on maintenance of the existing ISO system</td>
</tr>
<tr>
<td>Lessons Learned from the Case Study</td>
<td>Formulation and fulfillment of short-terms goals for achievement of long-term goals</td>
<td>Formulation and fulfillment of short-terms goals for achievement of long-term goals</td>
<td>Lack of short-term direction for long-term quality improvement</td>
<td>Lack of short-term direction for long-term quality improvement</td>
</tr>
<tr>
<td>Quality Improvement Measurement System</td>
<td>Central information system for consolidation of management decisions and performance outcomes: Regular information update</td>
<td>Continuous evaluation of performance on different dimensions: Information updated regularly on divisional basis for sharing throughout the hotel</td>
<td>No evaluation made for service and process performance because of the varied and project-based work nature; Manage data and information required by the ISO system guidelines</td>
<td>No assessment conducted for service and process performance; Maintenance of data and information required by the ISO system guidelines</td>
</tr>
<tr>
<td>Lessons Learned from the Case Study</td>
<td>Ways to ensure accuracy, consistency, timeliness, and access to data and information for improvement</td>
<td>Methods to ensure reliability, consistency, and rapid access to the data and information for improvement actions</td>
<td>Maintenance of data and information required by the ISO standards</td>
<td>Maintenance of data and information required by the ISO standards</td>
</tr>
<tr>
<td>Corporate Quality Culture</td>
<td>Company-wide quality culture sustained by its core values cascaded throughout the organization and strong top management support</td>
<td>Company-wide quality culture sustained by its guiding principles cascaded throughout the organization and strong top management support</td>
<td>Low level of quality culture because of the lack of “wholehearted” top management support and the management focus on short-term business results</td>
<td>Low level of quality culture because of the lack of top management support and the management focus on short-term business results</td>
</tr>
<tr>
<td>Lessons Learned from the Case Study</td>
<td>Ways to create atmosphere for organization-wide improvement efforts</td>
<td>Methods to cultivate atmosphere for company-wide improvement efforts</td>
<td>Low level of quality culture due to the lack of management support and focus of short-term business results</td>
<td>Low level of quality culture due to the lack of management support and focus of short-term business results</td>
</tr>
</tbody>
</table>

Table 6.4 Comparison of Cases in Total Quality Orientation (Cont’d)
6.3.2 Market Orientation and Organizational Performance

The results of the quantitative analysis in Chapter five indicated that the impact of market orientation on organizational performance is positive and significant (see Figure 5.7). The surveyed organizations also believe in market orientation as their business strategy, which can be reflected by their aggregated score in the market orientation scale (average score of 3.60, see Table 5.13). The positive affect of market orientation on organizational performance was reconfirmed in the qualitative research.

For the high performing group represented by KCRC and ISL, they display high level of market orientation. Their extent of market intelligence generation is wide, encompassing various organizational actors such as customers, competitors, regulators, and external market influences and through various channels, for example, employees, customers and outside organizations. The company-wide market intelligence generation keeps the two organizations informed of the market changes that might affect their businesses. On the other hand, market intelligence generated in the high performing group is not restricted for use by the top management, rather it is to be disseminated throughout the organizational structures in a multidirectional way, vertically between hierarchy levels and horizontally between functional areas. The organization-wide generation and dissemination of market intelligence enable the organizations to make concerted efforts and timely responses to the customer requirements and market changes.

Alternatively, low level of market orientation is obvious in the low performing group. They show a narrow approach in market intelligence generation that tends to be internally focused and covers the existing customers only. Perhaps, the job nature in the construction industry is project-based. Fulfillment of contractual agreements is considered as sufficient for satisfying customers in the industry. The major sources of market intelligence in these organizations appear to be restricted to a group of few staff members, for example, engineers. In addition, market intelligence dissemination in their organizations is slow and internally focused. Access to market information is limited to the staff members concerned. Market intelligence diffusion is mostly through a restricted approach (e.g. intelligence only shared within functions).
Furthermore, organizational activities in these organizations are not well connected and the responsibility for taking care of the customer needs and the market requirements is confined to a single department or a few staff members (e.g., engineers). All these restrict the responsiveness of AEL and BYME to the changes taking place in the market.

It was found that market orientation varies considerably between the high and the low performing groups. The issues that differentiate organizations with different degree of market orientation are concerned with the scope of market intelligence generation, the directionality of dissemination, the timeliness with which information traveled within the organization, organizational connectedness, and the degree of responsiveness to the market intelligence generated. Organizations showing high level of market orientation appear to be more sensitive to the changes in the customer requirements and the market environments. Ability to design and implement strategies with customers, competitors and the external environments is also demonstrated in the highly market-oriented organizations, resulting in a level of higher organizational performance with respect to customer satisfaction, organizational connectedness, and sensitivity to the market environments. These can be reflected in the cases of KCRC and ISL where they periodically meet with customers, interact with outside organizations to generate market intelligence, and disseminate the intelligence generated in various channels such as cross-functional meetings, bulletins and newsletters for organization-wide responses to the changes in the market environments. Table 6.5 gives a summary of the results about the levels of market orientation of the case studies conducted and presents the lessons from each case.
<table>
<thead>
<tr>
<th><strong>(Variables) MARKOR</strong></th>
<th><strong>KCRC</strong></th>
<th><strong>ISL</strong></th>
<th><strong>AEL</strong></th>
<th><strong>BYME</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market Intelligence Generation</strong></td>
<td>Broad approach in market intelligence generation, encompassing nearly all aspects of its business operations; Possess high level of market knowledge</td>
<td>Wide scope of market intelligence generation, covering various organizational actors; Possess good understanding of market and competitive environment</td>
<td>Narrow approach in market intelligence generation, sources confined to a few staff members such as engineers generated from existing customers; Dependent on observation and published materials from the industry</td>
<td>Narrow scope of market intelligence generation confined to sources from existing customers; Dependent on experience, judgment and relationships of engineers with outside organizations</td>
</tr>
<tr>
<td><strong>Lessons Learned from Case Study</strong></td>
<td>Methods employed to obtain high level of market knowledge</td>
<td>Ways adopted to achieve good understanding of market and competitive environment</td>
<td>Market intelligence generation limited to certain members of the company (e.g. engineers)</td>
<td>Market intelligence generation limited to certain members of the company (e.g. engineers)</td>
</tr>
<tr>
<td><strong>Market Intelligence Dissemination</strong></td>
<td>Regular meetings at all levels and various channels to disseminate the latest market intelligence</td>
<td>Regular meetings at all levels and various channels to disseminate the latest market intelligence</td>
<td>Some forms of departmental meetings to disseminate market intelligence</td>
<td>Occasional meetings for dissemination of market intelligence</td>
</tr>
<tr>
<td><strong>Lessons Learned from Case Study</strong></td>
<td>Rapid, multidirectional and effective ways for market intelligence dissemination at all levels</td>
<td>Rapid, multidirectional and effective ways for market intelligence dissemination at all levels</td>
<td>Slow and unidirectional; Restricted method of market intelligence dissemination</td>
<td>Slow and unidirectional; Ineffective way of market intelligence confined to staff members concerned</td>
</tr>
<tr>
<td><strong>Responsiveness to Market Intelligence</strong></td>
<td>High level of responsiveness to market intelligence based on objective evaluation of market conditions; Coordinated company activities in response to market changes</td>
<td>High level of responsiveness to market intelligence based on objective assessment of market and competitive environments; Concerted efforts to plan response to changes</td>
<td>Low level of responsiveness to market intelligence based on subjective judgments of market conditions; Function based responses focusing on existing customers; Broader environmental context not considered</td>
<td>Low level of responsiveness to market intelligence based on subjective judgments of market conditions; Reactive to market changes; Function based activities focusing existing customers; Broader environmental context not considered</td>
</tr>
<tr>
<td><strong>Lessons Learned from Case Study</strong></td>
<td>Methods of organizing and executing company-wide responses to market changes</td>
<td>Ways of formulating and implementing company-wide strategies responsive to market places</td>
<td>Focus on existing customers for fulfillment of contractual agreements; Strategies responsive to the broader market environment not evident</td>
<td>Focus on existing customers for fulfillment of contractual agreements; Strategies responsive to the broader market environment not evident</td>
</tr>
</tbody>
</table>

*Table 6.5 Comparison of Cases in Market Orientation*
6.3.3 Total Quality Orientation and Market Orientation

It was found in the survey research that total quality orientation and market orientation in organizations are significantly correlated in a positive direction. This indicates that the level of quality management practice in an organization increases with its level of marketing practice and vice versa. The complementary nature of the two management approaches is also evidenced in the qualitative research.

For the high performing group, KCRC and ISL, total quality orientation and market orientation in their organizations are both high. Quality management lends them the environment for diffusion of the voices of customers throughout their organizational structures and to their partner organizations to meet the customer requirements. It helps to integrate employees of all organizational functions, from the top management to the line staff, to pursue quality improvement and to satisfy customer requirements. Their quality management practices also spread to other outside organizations such as suppliers and educational institutes, building the value chains in the quality improvement process. Quality management connects people both inside and outside their organizations to reach for the goal of customer satisfaction. Quality improvement tools they adopt, for example, adoption of PDCA in ISL, contribute to the efficiency of their business operations. The high level of total quality orientation in their organizations couples with the high level of market orientation aligning all the organizational actors both inside and outside the organizations to arrive at customer satisfaction effectively and efficiently. On the other hand, the high level of market orientation in KCRC and ISL helps to assure customer focus in their quality improvement process, avoiding the pitfall of inward focus. Both KCRC and ISL are of high level of market orientation in terms of the scope of market intelligence generation, timeliness and multi-directionality of the market information diffusion, and the degree of the responsiveness to market intelligence generated. The high level of market orientation in KCRC and ISL ensures that the voices of the customers and the environmental changes in the marketplace are taken into account in their quality management efforts, resulting in customer- and market-desired quality.
Total quality orientation and market orientation are both low in the low performing group, AEL and BYME. Quality management in their organizations tends to be a separate program rather than a continuous improvement process (e.g. focus on maintenance of the existing ISO 9002 system rather than continuous improvement beyond the system). Quality management is practiced at rudimentary level, i.e. limited to the maintenance of the existing ISO 9002 system, with only the documentation and auditing procedures in place. The level of TQOR/MARKOR alignment therefore appears to be low in the group. Though there are interactions among functional members, their activities are not well collaborated which fail to focus on working together, having mutual understandings, embracing common visions, sharing resources, and achieving collective goals. The lack of interdepartmental collaboration reduces organizational ability to design and implement strategies in response to the ever changing customer requirements and market needs, and therefore dissipates the level of market orientation in their organizations. On the other hand, the low level of market orientation in AEL and BYME with respect to market intelligence generation, dissemination, and responsiveness to it lead them into an inward focus of quality management effort. They run the risk of losing sight of the market needs and the voices of customers in their quality improvement journey. Because of the lack of a common language for quality management (e.g. customer satisfaction), collaboration among functional areas and coordination of organizational activities are not obvious. The level of total quality orientation in their organizations is therefore weakened.

It appears in both the survey research and the case studies that TQM and marketing are complementary management approaches in organizations. Quality management acts as an integrating mechanism both internally and externally to drive organization-wide efforts to satisfy customers efficiently, while marketing plays the role of guiding other organizational members on the importance of customer satisfaction and assures a market focus on quality management efforts. This is apparent in the highly TQOR/MARKOR aligned organizations. However, the degree of TQM/marketing mutual reinforcement is less obvious in organizations with a low level of TQOR/MARKOR alignment.
6.3.4 Total Quality Orientation and Market Orientation in Organizations and Level of Organizational Performance

Both KCRC and ISL demonstrate considerable awareness of the relevance and importance of quality management and market orientation in their business operations. However, AEL and BYME do not take them at a high priority in their management approaches. They would rather focus on short-term business results such as profitability of each project and on-time project completion.

Quality management and market orientation appear to be indispensable for the high performing group. Both KCRC and ISL regard quality improvement and market focus as competitive advantages or as minimal survival qualifications due to pressure from the ever increasing customer expectations. It is obvious in the qualitative research that organizations with a higher level of TQOR/MARKOR alignment achieve better organizational performance than those with a lower level of it. A customer focus is assured in the business operations of the high performing group that guarantees delivery of the customer-desired quality. Changes in customer expectations and market requirements are periodically monitored with a broad ranges of market intelligence to guard against any quality gap between customers and the organizations. Employees in KCRC and ISL are provided with ample opportunities for training, communication with the upper management, and exposure to the market environments. They are also empowered and motivated to involve in quality improvement and to strive for their organizational goals. Multi-directional and rapid market information transfer is also apparent in the highly TQOR/MARKOR aligned organizations. All these enable them to be proactive enough for any changes taking place in their market environments. As a result of the high level of organizational responsiveness, the performance level for organizations with a high level of TQOR/MARKOR alignment, i.e. KCRC and ISL, appears to be better than those with a low level of TQOR/MARKOR alignment, i.e. AEL and BYME, in the four case studies. Table 6.6 provides a summary of organizational performance of the four cases studied and the lessons learned.
<table>
<thead>
<tr>
<th>Variables (PERFORM)</th>
<th>KCRC</th>
<th>ISL</th>
<th>AEL</th>
<th>BYME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Performance</td>
<td>Market focus ensured in business operations; Growth in total number of passengers: Performance level met all its performance pledges and targets</td>
<td>Market focus ensured in business operations; Highest percentage of repeat visitors in the industry; Increase of customer satisfaction and market share</td>
<td>Fulfillment of contractual agreements with customers; No significant improvement perceived to have been made in the broader market performance</td>
<td>Fulfillment of contractual agreements with customers; No significant improvement perceived to have been made in the broader market performance</td>
</tr>
<tr>
<td>Lessons learned from the case study</td>
<td>Customer and market focus in business operations</td>
<td>Customer and market focus in business operations</td>
<td>Internal focused business operations</td>
<td>Inward focused business operations</td>
</tr>
<tr>
<td>Productivity Performance</td>
<td>Increase in revenue per employee and ROA; Decrease in operating cost per passenger</td>
<td>Increased productivity with a save in energy, water, and electricity consumption</td>
<td>No measure of productivity performance</td>
<td>No measure of productivity performance</td>
</tr>
<tr>
<td>Lessons learned from the case study</td>
<td>Commitment to continuous improvement</td>
<td>Commitment to continuous improvement</td>
<td>Failure to track improvement progress; Lack of commitment to continuous improvement</td>
<td>Failure to measure improvement progress; Lack of commitment to continuous improvement</td>
</tr>
<tr>
<td>Motivation Performance</td>
<td>Increase of employee satisfaction; Employees motivated and empowered for continuous improvement; Sufficient training for job skills and knowledge; Low employee turnover compared to Hong Kong average</td>
<td>Motivated and empowered employees for continuous improvement; Ample training for job skills and knowledge provided; Lowest employee turnover rate in the industry</td>
<td>Training provided for job skills and knowledge; Employees less motivated for performance improvement</td>
<td>Training provided for job skills and knowledge; Employees not provided with incentives for performance improvement efforts</td>
</tr>
<tr>
<td>Lessons learned from the case study</td>
<td>Motivation for employee participation in continuous improvement; Team working environment</td>
<td>Motivation for employee participation in continuous improvement; Team working environment</td>
<td>Lack of encouragement to employees for continuous improvement; Lack of coordinated organizational activities for performance improvement</td>
<td>Lack of motivation for employee involvement in continuous improvement; Lack of coordinated organizational activities for performance improvement</td>
</tr>
<tr>
<td>Societal Performance</td>
<td>Efficient use of resources and energy; Awareness of environmental protection; Recognition of customer rights; Experience sharing of quality improvement with others</td>
<td>Efficient use of resources and energy; Recognition of environmental protection; Participation in community activities; Experience sharing of quality improvement with others</td>
<td>Provision of safe working environment for both the employees and the public; No measure of societal performance</td>
<td>Provision of safe working environment for both the employees and the public; No measure of societal performance</td>
</tr>
<tr>
<td>Lessons learned from the case study</td>
<td>Satisfaction of interest of multiple stakeholders in business operations</td>
<td>Satisfaction of interest of multiple stakeholders in business operations</td>
<td>Failure to consider interest of multiple stakeholders in business operations</td>
<td>Failure to consider interest of multiple stakeholders in business operations</td>
</tr>
</tbody>
</table>

Table 6.6 Comparison of Cases in Organizational Performance
6.3.5 Factors Affecting Total Quality Orientation and Market Orientation

How organizations implement their quality management and marketing practice differ markedly as found in the qualitative research. The four cases display organizations with high and low levels of TQOR/MARKOR alignment respectively. Table 6.7 shows the factors (noted in the comparison of cases) that differentiate the two groups of cases and presents the lessons learned from each case.

It is obvious in the high performing group that top management actively participates and involves in quality improvement, while it is not the case for the low performing group. Top management support plays a major role in promoting company's vision, quality values, and the importance of customer satisfaction. Effective leadership by top management in KCRC and ISL (e.g. reinforcement of quality values both within and outside the company; participation in quality improvement) creates a customer-focused culture for continuous improvement and facilitates sharing of company's vision, missions, values, goals, and commitments by all their organizational members. Furthermore, top management leadership contributes to building teams, motivating employees, and developing harmonious working relations between the management and the line staff in both KCRC and ISL, driving organization-wide efforts for quality improvement and achievement of customer satisfaction. However, top management support is not apparent in AEL and BYME. Quality improvement is put at a lower priority than short-term business results by the top management. Market orientation with respect to intelligence generation, dissemination, and responsiveness to it is also less emphasized. In both AEL and BYME, top management involvement and participation in quality improvement is not obvious. As a result, quality management activities in the two organizations tend to be internal focused rather than market-oriented.

The organization of systems also differs significantly between the high and the low performing groups. Though work is organized on a departmental basis in KCRC and ISL, their organizational structures display flexibility to encourage employee participation for quality improvement and cross-functional improvement activities. Team work structures and environments in the forms of quality control circles, quality
improvement club, and periodical cross-functional meetings, are apparent in KCRC and ISL. Effective communication channels are built in the two organizations not only within each department but between departments, from top management to line staff, allowing their employees to obtain facts and information needed to improve job performance. In comparison, team work structures in AEL and BYME tend to be hierarchical and rigid, hindering employee’s involvement and cross-functional activities for quality improvement. Effective channels of communication within each department and among the staff members, and between top management and line staff are not obvious in AEL and BYME. On the other hand, sound reward and recognition systems are established in KCRC and ISL that reinforce employee participation and involvement in quality improvement. Training need analyses are periodically conducted to determine the necessary skills, knowledge, attitudes, and behavior required from different levels of employees for performance improvement. In addition, employees in the two organizations are empowered to improve their jobs and are encouraged to make suggestions for improvement of their job environments. However, systems for determination of employees’ training needs, employee motivation and empowerment of employees for performance improvement are less obvious in AEL and BYME.

The focus on performance improvement also varies considerably between the high and the low performing groups. Both KCRC and ISL regard it as a never-ending continuous business improvement process by continuous review of performance goals and periodical measurement of improvement progress. Strategic directions for performance improvement are set and streamlined throughout the organizational hierarchy for improvement efforts. Specific company’s goals and objectives are developed and are subjected to continuous and regular measurements and evaluations to strengthen the foundation on which the performance improvement process can function effectively. Constant attention and focused efforts are paid in both KCRC and ISL to establish a continuous improvement process that is cross-functional and organization-wide. Alternatively, a continuous process improvement focus is less apparent in AEL and BYME. They tend to take it as an ad hoc program and fail to recognize the continuous nature of process improvement. Quality issues are placed at lower priority than short-term business results. Quality systems are implemented at the request of the market environments (e.g. stipulation of the Housing Authority for
public work tender), not at the initiative of self-improvement. Furthermore, the concept of process improvement is not well received and practiced in AEL and BYME. Departmentalism and functional practices for departmental well-being rather than for process improvement of the whole organization dominate in AEL and BYME.

Based on the case comparisons, it can be concluded that the differences in the results of TQOR/MARKOR alignment in the four case studies can be attributed to the following three factors: 1) top management commitment and involvement, 2) organization of systems, and 3) continuous process improvement focus.

<table>
<thead>
<tr>
<th>Factors</th>
<th>KCRC</th>
<th>ISL</th>
<th>AEL</th>
<th>BYME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Management Commitment and Involvement</td>
<td>Active participation of top management in quality improvement; Commitment to quality improvement by providing resources and directions</td>
<td>High level of top management involvement in quality improvement; Commitment to quality improvement by reinforcement of quality values both inside and outside of the hotel; Provision of guidance and employee motivation</td>
<td>Top management focuses on short-term business results rather than quality improvement; Lack of top management involvement and resources committed to quality improvement; Emphasis on maintaining existing ISO system</td>
<td>Top management focuses on profitability, and on-time project completion rather than quality improvement; Lack of top management commitment and resources dedicated to quality improvement; Emphasis on maintaining existing ISO system</td>
</tr>
<tr>
<td>Lessons Learned from the Case Study</td>
<td>Creation and reinforcement of market-focused culture, team working environment, and continuous improvement focus; Role model for motivation of employees for performance improvement</td>
<td>Creation and reinforcement of market-focused culture, team working environment, and continuous improvement focus; Role model for motivation of employees for performance improvement</td>
<td>Failure to cultivate market-focused quality improvement focus, team working environment, and continuous improvement culture due to lack of top management support</td>
<td>Failure to cultivate market-focused quality improvement focus, team working environment, and continuous improvement culture due to lack of top management support</td>
</tr>
</tbody>
</table>

Table 6. 7 Factors Affecting TQOR/MARKOR Alignment in Organization
<table>
<thead>
<tr>
<th>Organization of Systems</th>
<th>Flexible teamwork structure for performance improvement; Process owner appointed for cross-functional activities; Effective communication channels throughout the organization</th>
<th>Flexible teamwork structure for performance improvement; Team leader nominated for cross-function process; Effective communication channels throughout the hotel</th>
<th>Rigid and hierarchical teamwork structure; Department and function based management practice; Ineffective communication among functions in the company</th>
<th>Rigid and hierarchical teamwork structure; Department and function based management practice; Ineffective communication among functions in the company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lessons Learned from the Case Study</td>
<td>Flexible organizational structure for functional communication, coordination, and collaboration in various forms (e.g. cross-functional meetings) for performance improvement</td>
<td>Flexible organizational structure for functional communication, coordination, and collaboration in various forms (e.g. cross-functional meetings) for performance improvement</td>
<td>Rigid organizational structure hindering communication, coordination, and collaboration among functions for performance improvement</td>
<td>Rigid organizational structure hindering communication, coordination, and collaboration among functions for performance improvement</td>
</tr>
<tr>
<td>Continuous Process Improvement Focus</td>
<td>Commitment to continuous improvement; Organization-wide process improvement focus; Continuous measurement and evaluation of company’s goals, objectives, and performance improvement</td>
<td>Dedication to continuous improvement; Company-wide focus on process improvement; Continuous measurement and assessment of company’s goals, objectives, and performance improvement</td>
<td>Lack of commitment to continuous improvement; Departmentalized management practice lacking focus on process across functions; Limited measurement of performance outcomes</td>
<td>Lack of commitment to continuous improvement; Departmentalized management practice lacking focus on process across functions; Limited measurement of performance outcomes</td>
</tr>
<tr>
<td>Lessons Learned from the Case Study</td>
<td>Commitment to continuous improvement; Organization-wide process improvement focus</td>
<td>Dedication to continuous improvement; Company-wide process improvement focus</td>
<td>Lack of commitment to continuous improvement; Efforts for improvement limited to separate functions or a few engineers</td>
<td>Lack of commitment to continuous improvement; Efforts for improvement limited to separate functions or a few engineers</td>
</tr>
</tbody>
</table>

Table 6.7 Factors Affecting TQOR/MARKOR Alignment in Organization (Cont’d)
6.4 Summary of Cases

The four cases display the profile of organizations with high and low level of TQOR/MARKOR alignment respectively. In line with the results of the survey research, TQM and marketing were found to be complementary management approaches in organizations. Both quality management and marketing affect organizational performance positively, but the performance impact of quality management has to be driven through a market focus. It was also observed in the case studies that the level of organizational performance is higher for organizations with a higher level of TQOR/MARKOR alignment that those with a lower level of TQOR/MARKOR alignment. Among the key factors impinging upon the degree of TQOR/MARKOR alignment, top management commitment and involvement, organization of systems, and continuous process improvement focus are the most obvious factors that distinguish the high from the low performers in the qualitative research. These findings are not discernible from the results of the survey research. The following chapter will discuss the implications of the results of the study.
Chapter 7 -- Discussions and Implications

7.1 Introduction

This study examines the relationships of TQM, marketing and organizational performance. Chapter one presents the background of the study and the significance of investigating the impact of TQM and marketing on Hong Kong businesses. Chapter two reviews the literature relevant to the study centering on the concept, evolution, and development of the three research constructs of concern: TQM, marketing and organizational performance. The literature review led to the development of the conceptual framework and hypotheses among the three research constructs of total quality orientation, market orientation, and organizational performance in Chapter three. The research methodology for investigating the links among the three constructs is described in Chapter four as consisting of two phases: quantitative and qualitative. The research hypotheses and the conceptual model were tested in the quantitative phases of the study with data from a large sample cross-sectional mail survey, and the results are presented in Chapter five. The results of the qualitative phase of the study that involved four in-depth case studies of organizations showing different degree of TQOR/MARKOR alignment are presented in Chapter six. The intent of Chapter six is to advance knowledge in TQM/marketing management interface.

A primary objective of this study was to build theory specific to the relationships among TQM, marketing and organizational performance. The results of the study are discussed in light of the research objectives set in Chapter one, the contributions and the implications of the study, and suggestions for further research. This chapter consists of eight sections. This section gives an overview of what have been achieved in the preceding chapters and a brief introduction of this chapter. Section 7.2 evaluates the achievement of the research objectives of the study. Section 7.3 gives discussions of the findings from Chapter five in the quantitative research and from Chapter six in the qualitative research. Section 7.4 discusses the contributions of the study. Section 7.5 addresses the theoretical and the managerial implications of the study. Section 7.6 highlights the study’s limitations. Section 7.7 explores suggestions
and directions for further research. The last section of this chapter provides summary and concluding remarks of the study.

7.2 Evaluation of Research Objectives Achievement

The research objectives of this study are concerned with establishing a conceptual model linking TQM, marketing and organizational performance, developing valid indicators for the latent constructs, proposing and testing hypotheses concerning the relationships among the three research constructs, and advancing knowledge in TQM/marketing management interface and its impact on organizational performance. In addition to exploring the performance implications of TQM and marketing, the study has attempted to ground theory in TQM/marketing management interface from the TQM and marketing disciplines. In this way, it has attempted to contribute to the cumulative theory building process in the two fields.

In short, the study has objectives in five areas which have been stated in Chapter one and are reproduced below:

1) provide a reference for organizations about the possible impact of TQM on organizational performance within Hong Kong industry.
2) provide a reference for organizations about the possible impact of marketing on organizational performance within Hong Kong industry.
3) develop and test predictions of a conceptual framework integrating TQM, marketing and organizational performance.
4) specify and test hypotheses from the research model of TQM, marketing and organization performance that is derived from their theoretical foundations.
5) explore the TQM/marketing management interface and the factors affecting the TQM/marketing relationships.

The first four objectives are discussed below. The last objective, advancing knowledge in TQM/marketing management interface and its impact on organizational performance, is discussed throughout the chapter.
The conceptual model in the study linking TQM, marketing and organizational performance was built from an extensive review of a wide variety of literature, especially the total quality management and the marketing literature. The foundation of the conceptual model is laid in Chapters two and three. Chapter two reviews the evolution, conception and performance implications of TQM and marketing. Chapter three extends the theoretical background of the research constructs reviewed in Chapter two and examines the roles the constructs play to each other. It then builds conceptual model and specific hypotheses concerning the relationships among the constructs under the study. In the process of model development, an attempt was made to identify the factors that might affect the hypothesized relationships in the model. Due to the lack of extant literature on TQM/marketing management interface to suggest those factors, the factors that might affect the hypothesized relationships in the model were not included and were left to be identified in the qualitative phase of the study. Chapter four operationalizes the research constructs and discusses the methodology for approaching the research issues identified.

Chapter five provides results of the estimation of the measurement models and the structural relationships among the constructs. In addition, it was found in the quantitative research that public utility and service industry in Hong Kong tend to be more total quality-oriented and market-oriented, while manufacturing and construction industries tend to be less oriented towards these two management approaches. It was found in both the survey research and the case studies that organizations with a higher level of TQOR/MARKOR alignment (high total quality orientation and high market orientation) appeared to achieve a higher level of organizational performance.

The first four research objectives set in Chapter one have been adequately addressed in the previous chapters and the results of the quantitative research are summarized in sections 7.3.1 and 7.3.2. The last objective, advancing knowledge in TQM/marketing management interface, is discussed in section 7.3.3 and the sections that follow.
7.3 Summary of the Study Findings

The findings of the study are composed of two parts: findings from the quantitative research and findings from the qualitative research. Findings of the quantitative research relate to scale development, model generation, and model estimation. Findings of the qualitative research are concerned with knowledge advancement in TQM/marketing management interface and its impact on organizational performance.

7.3.1 Discussion of Quantitative Research Findings: Measurement Results

This study has formed measurement models for the three major constructs of concern: TQM (total quality orientation), marketing (market orientation), and organizational performance. Measurement development, performed in Chapter five, showed that the measures selected for the study fit the data reasonably well. The confirmatory factor analyses generally provided solid support for the proposed measurement models of the three research constructs. Though the scales adopted in the study were borrowed and modified from past literature which have been used in other studies (for example, the MARKOR scale has been widely applied in variously studies measuring market orientation), they seem to have not been subjected to measurement development and scale validation using structural equation modeling technique, i.e. LISREL. Considering the results of the traditional measures and the confirmatory factor analyses, the scale used in this study appeared to be valid and reliable. The measurement results of the three research constructs are briefly discussed in the following sub-sections.

7.3.1.1 Total Quality Orientation Construct

The proposed measurement model for total quality orientation suggests that the construct is a higher (second) order construct composed of ten lower (first) order constructs. Confirmatory factor analyses provided support for the ten dimensional total quality orientation measurement model. Except one item, all of the other items (38) loaded significantly onto their proposed construct dimensions, providing support for convergent validity of the measurement model. The insignificant item was retained because of other measures, i.e. item-total correlation and Cronbach’s alpha,
and theoretical support for retention. Furthermore, the composite measures of the ten total quality orientation factors loaded significantly (e.g. high lambda loading) in the paths with their higher order construct, i.e. total quality orientation. It gave additional support for the convergent validity of the total quality orientation construct. In addition, Cronbach’s alphas were relatively high in the ten proposed dimensions of the total quality orientation construct, providing support for reliability of the measures. The alpha values ranged from 0.67 to 0.89 for the ten first order factors of the construct, and the alpha value for the construct at the second order level was as high as 0.95. The results suggested that the instrument borrowed and modified from work of Black and Porter (1996) measuring total quality orientation in the study is both valid (as the items were convergent to their proposed dimensions) and reliable.

Though all the ten dimensions of the total quality orientation construct were significantly correlated, the high level of intercorrelations among the first order factors was expected as they represent their underlying second order construct, i.e. total quality orientation. The confirmatory factor analysis results suggested that they are empirically distinct. The loadings, i.e. lambdas, of the ten first order factors on their second order factor, i.e. the total quality orientation, were significant in both the confirmatory factor analysis at the second order level and the structural model testing, providing evidence for the presence of a higher order construct, i.e. total quality orientation.

7.3.1.2 Market Orientation Construct

Market orientation was proposed as a higher (second) order construct consisting of three lower order constructs. The construct was adopted from the MARKOR scale developed by Kohli et al (1993). Results of the confirmatory factor analyses provided strong support of this model. For each of these first order factors (dimensions), ranging from five to nine items measure, all the construct items except one appeared to load significantly on the first order factors they were expected in the confirmatory factor analysis. The weakly loaded item was not deleted because of other measures, i.e. item-total correlation and Cronbach’s alpha, and theoretical reasons to retain it. In addition, all the alpha values for the market orientation construct at both the first and the second order levels were high ranging from 0.82 to 0.85 at the first order level and
being 0.86 at the second order level. Factors at both the first and the second order levels of the market orientation construct appeared to have a high Cronbach’s alphas, indicating that they are internally consistent measures.

All the three dimensions of the market orientation construct appeared to be significantly correlated, this was anticipated as they are all measuring their corresponding second order construct, i.e. market orientation. Results from the confirmatory factor analysis suggested that the three first order factors of the market orientation construct are empirically distinct. The loadings, i.e. lambdas, for the three first order constructs (dimensions) were significant in both the confirmatory factor analysis at the second order level and the structural model testing, providing evidence for the existence of a higher order construct, i.e. market orientation.

7.3.1.3 Organizational Performance Construct

The proposed measurement model for organizational performance suggests that the construct is a higher order construct consisting of four lower order constructs. The construct was borrowed from the multiple performance measures developed by Weerakoon (1996) which captures the interests of multiple stakeholders. Results of the confirmatory factor analysis provided support for this model. The fifteen items except one loaded significantly on their corresponding lower (first) order constructs which measure the higher (second) order organizational performance construct. The weakly loaded item was not eliminated because of other measures, i.e. item-total correlation and Cronbach’s alpha, and theoretical support for retention. The confirmatory factor analysis, i.e. high lambdas loadings, provided support for four dimensions of the organizational performance construct. Cronbach’s alphas for the organizational performance construct and its four first order factors lent support for the reliability of the measures. The alpha value was 0.89 at the second order level and was in the range of 0.74 to 0.89 at the first order level of the organizational performance construct.

As expected, the four first order factors comprising the higher order organizational performance construct were all significantly correlated because they are measuring the same higher order construct. However, they appeared to be empirically distinct in
the confirmatory factor analysis. High lambda loadings of the four first order factors on their higher order construct in both the confirmatory factor analysis at the second order level and the structural model testing suggested existence of the second order factor, i.e. organizational performance.

7.3.2 Discussion of Quantitative Research Findings: Path Analysis Results

This section discusses the results of model estimation and path analyses conducted to examine the relationships among total quality orientation, market orientation and organizational performance.

LISREL 8 and other statistical techniques were used for statistical analyses. The results of the statistical analyses answered most of the research questions of the study, while some of them were only partially answered and to be addressed in the qualitative research. The proposed relationships generated from exhaustive literature review in the conceptual model was tested using path analysis in the structural model. According to the survey results, the proposed model linking total quality orientation, market orientation, and organizational performance was considered adequate and fit to the data observed. It was identified that total quality orientation and market orientation in organizations are significantly correlated in a positive direction. There was also strong statistical evidence that market orientation has a positive affect on organizational performance. However, the hypothesis that total quality orientation has a positive affect on organizational performance was not established. As total quality orientation and market orientation were found to be positively correlated in organizations, the performance impact of quality management in organizations is driven through market orientation.

The equation shown below is developed from the results of path analyses for hypotheses testing. The estimators for the equation are listed according to their importance and significance.

\[
\text{PERFORM} = c_1 \text{MARKOR} + c_2 \text{TQOR} + e
\]

PERFORM = organizational performance construct
MARKOR = market orientation construct
TQOR = total quality orientation construct
c1 = regression coefficient of MARKOR in equation
c2 = regression coefficient of TQOR in equation
e = error term in equation

In the equation, market orientation and total quality orientation together explained 89% of the variance in organizational performance. The estimator of market orientation is significant and large (0.89, t > 2.0), while the estimator of total quality orientation is insignificant and small (0.04, t < 2.0). The TQOR-PERFORM path showed insignificant contribution of quality management to organizational performance. However, the MARKOR-PERFORM path indicated a positive and significant impact of market orientation on organizational performance. There is also sufficiently strong statistical evidence to support the synergistic nature of quality management and marketing in organizations as indicated by their strong intercorrelations. As the construct of the total quality orientation and market orientation are highly correlated, the impact of TQOR on organizational performance in the equation is captured by MARKOR. The findings of model testing suggest that quality management alone does not appear to have a direct effect on organizational performance success. In fact, the lack of a positive relationship between quality management and performance would imply that organizations should not simply focus on internal improvement. Rather, it may be appropriate to develop an outward-looking improvement focus on market needs, driving organizational performance through a market-oriented culture. This implies that a market orientation is required for TQM to drive organizational performance.

7.3.3. Discussion of Qualitative Research Findings: Case Studies Results

The quantitative phase of the study yielded a finding that there is no evidence to support the hypothesized contention that total quality orientation affects organizational performance, i.e. insignificant loading in the path between total quality orientation and organizational performance, see Figure 5.7. However, the notion that market orientation has a positive impact on organizational performance is supported. There is also strong statistical evidence that total quality orientation and market
orientation in organizations are positively correlated. The contribution of total quality orientation to organizational performance is driven through market orientation in organizations. Consistently, it was identified in the qualitative research that high level of TQOR/MARKOR alignment in organizations contributes to predictions of high level of organizational performance achievement and vice versa.

The qualitative phase of this study explored TQM/marketing management interface by examining the experiences of four organizations. Although the degree of total quality orientation and market orientation differ between each of the cases, they agree that both quality management and market orientation are effective in enhancing their performance. All the four cases view quality improvement and market orientation as important facets of their business operations although they differ in the extent of quality management and marketing implementation. Based on the case studies results, total quality orientation and market orientation are considered necessary to achieve better organizational performance. Among others, top management involvement and commitment, organization of systems, and continuous process improvement focus were found to be the most significant organizational elements affecting TQM and marketing efforts in organizations and therefore differentiating the resulting performance.

Overall, the case investigations are more explicit than the survey results in describing managerial insights in TQM/marketing management interface. Although the survey results are useful in explaining the nature of relationships among TQM, marketing and organizational performance, the cases help to explain the how’s and the why’s of the relationships themselves. The case investigations also contribute to a greater understanding of some of the research questions not completely addressed by the survey research. For example, the survey results did not reveal how and why TQM and marketing interact in organizations, the factors affecting achievement of high level of TQOR/MARKOR alignment in organizations. The case investigations provided insights to those questions not completely answered by the findings in the survey research. Additionally, the case studies also help to identify management practices that distinguish high performers from low performers and to explain why total quality orientation (based on survey results) is not significantly related to organizational performance. The cases also portray that the performance impact of
total quality orientation is driven through market orientation that was not fully captured in the survey research itself. The cases studies conducted reinforce the survey results and the predicative nature of quality management and marketing practices as they relate to organizational performance.

In sum, both the research methodologies (quantitative and qualitative) used in the study and the findings consistently support the idea that both total quality orientation and market orientation contribute to organizational performance and that they comprise a critical subset of practices and behaviors that managers should consider to improve performance. Similarly, triangulation in the case studies leads to a greater understanding of those practices and the factors that differentiate between high and low performers.

7.4 Contributions of the Study

This study makes several contributions to research and theory of TQM and marketing. Issues discussed in the following sub-sections relate to the areas of TQM, marketing, TQM/marketing management interface, general picture of TQM and marketing implementation in Hong Kong, and various methodological issues.

7.4.1 Total Quality Management

This study contributes to the field of TQM in several areas. Topics to be discussed in the following paragraphs include integration of literature on TQM, development and operationalization of a measurement model of total quality orientation.

This study has extensively reviewed quality related literature and various research on TQM, including the work of quality gurus, and the models of quality awards for the development of total quality orientation construct in this study. Other literature related to TQM has also been examined, including operations management and strategic management. It was identified in Chapter two that all of the work reviewed have a common focus on quality improvement for customer-organization relationship, with an emphasis on the development of long-term relationships satisfying the needs of
both parties. Thus one contribution of the study has been to integrate the literature with the formation and operationalization of the total quality orientation construct.

Unlike previous studies on total quality orientation (e.g. Mohr-Jackson 1998), this study provides a theoretical framework of the construct and focuses on construct measurement. The total quality orientation construct, based on the work of Black and Porter (1996) and an extensive review of extant literature, was not only proposed but also developed and empirically evaluated. This study addresses both the definitional and measurement issues by supplying a ten-dimensional definition of total quality orientation and developing a valid and reliable instrument to operationalize the construct.

As greater understanding of the total quality orientation is provided, further investigation of the relationship between total quality orientation and business performance is facilitated. The results suggest that total quality orientation affects organizational performance and its performance impact is driven through market orientation. It provides impetus for future research to investigate these relationships more fully and broadly (e.g. in international context) to substantiate evidence of the relationship between total quality orientation and organizational performance.

Additionally, benefits of being total quality oriented are suggested. Most of the research on the performance impact of TQM was confined to financial measures. This study took multidimensional measure of performance to evaluate the impact of quality management. The findings provide further evidence in supporting the contention that TQM (aligned with marketing) adds to the bottom-line of organization.

7.4.2 Marketing

Major contribution of the study to the marketing discipline is the extension of previous research on market orientation. It replicated and applied measure development techniques to the market orientation scale developed by Kohli et al (1993). The twenty-items MARKOR instrument developed by Kohli et al (1993) was validated in this study as a higher order construct composed of three lower order
factors: market intelligence generation, market intelligence dissemination, and responsiveness to market intelligence.

Given the difference between the Western and the Eastern cultures, wordings of some items in the original MARKOR instrument were modified to adjust for the seminal difference. The modified MARKOR instrument was found to be valid and reliable, especially it exhibited high degree of predictive validity. This type of extension addresses on aspect of external validity, namely the concept of generalizing across cultures. The modified MARKOR scale used in this study facilitates discovery of any limitations of the scale and foster legitimate extensions of theoretical development of market orientation.

7.4.3 TQM/Marketing Management Interface

Several contributions are made by the study, but the major contribution is that the study is an initial attempt to gain empirical knowledge on TQM/marketing management interface and its impact on organizational performance. This study is the first step to develop and test a conceptual model linking TQM, marketing and organizational performance that adds knowledge to TQM/marketing management interface.

For many years, both quality practitioners and academics have been exhorting that quality management can bring substantial gains in product and service quality. Many organizations invest heavily in quality improvement programs in an effort to upgrade product and service quality for the overall success of their businesses. Similarly, the marketing concept has been recognized by many firms and academics as an important aspect of business operations for nearly half a century. Although the relationships between TQM and performance, and marketing and performance have been extensively addressed and assessed in various studies (e.g. Narver and Slater 1990; Powell 1995), little attention has been paid to the linkages among the three constructs. In addition to extend previous research on the performance impact of TQM and marketing, the study adds to the empirical research on the TQM and marketing impact with multi-dimensional performance measures. The validity and possible generalizability of the present model linking TQM, marketing and organizational
performance verified in the study provide impetus for future research utilizing this model and the relevant constructs. The findings should enrich the body of knowledge among academicians as well as practitioners.

The survey research confirmed the relationships among TQM, marketing and organizational performance, i.e. reasonably high level of model fitness to the data observed. Though there was no statistical evidence to support the notion that total quality orientation affects organizational performance in the quantitative research, there was strong evidence in the qualitative research that quality orientation contributes significantly to the prediction of organizational performance, and that its performance impact is driven through market orientation. The multi-method approach used in the study was proved to be very beneficial. For example, even though the literature reviews suggested several antecedents of market orientation, the factors affecting the TQM/marketing relationships identified in the case studies were not available from the extant literature and could not be discerned from the results of the survey research. Importantly, linkages among TQM, marketing and organizational performance are established in the study. This helps to clarify the complementary nature of the two management approaches on organizational performance and the roles that TQM and marketing should play in organizations.

Marketing must work with the other functional areas to enhance customer value and increase customer satisfaction. It acts as a customer window to discern customer needs in the process of quality improvement and assures that market intelligence will be of utmost importance in guiding organizational responses to customer needs and market changes. Alternatively, quality management provides the structure, techniques, implementation and control mechanisms required by marketing for its effective implementation. The need to develop outward-looking focus on market needs rather than inward improvement focus for quality improvement was highlighted and that the ways TQM complements marketing for delivery of customer satisfaction was discussed. The study also suggests areas where the marketing and the quality discipline can help each other for performance improvement. By employing the two management approaches as equally important performance drivers, how organizations actually accomplish the goal of delivering superior value and high level of organizational performance was explained. Organizations with different levels of
TQOR/MARKOR alignment were compared and contrasted in the qualitative research. Several factors affecting achievement of high level of TQOR/MARKOR alignment in organizations were identified. Those factors include top management commitment and involvement, organization of systems, and continuous process improvement focus.

**7.4.4 Report on TQM and Marketing Practice in Hong Kong**

In addition to exploring the viability of TQM and marketing as competitive strategies, developing and testing a conceptual model to assess the performance implications of the two management approaches, this study gives insights into the levels of quality management and marketing implementation in Hong Kong.

It was found that public utility and service industry have a relatively higher level of quality management and marketing implementation than manufacturing and construction industry in Hong Kong. The aggregated scores in the scales of total quality orientation and market orientation were 3.93 and 3.82 for the public utility sector, and 3.64 and 3.74 for the service sector. The aggregated scores in the scale of total quality orientation and market orientation for the manufacturing and the construction sectors were 3.52 and 3.68, and 3.28 and 3.40 respectively. In addition, many of the surveyed organizations were found to be at an infant stage of their quality management implementation with most of them (80%, see Table 5.1) have quality age below 6 years. The pictures of total quality orientation and market orientation depicted for different types of industry in Hong Kong give general industrial benchmarks for organizations to gauge their own levels and to keep pace with the levels of quality management and marketing implementation in their own industry.

**7.4.5 Scale Validation in Measure of TQM, Marketing, and Organizational Performance**

This study demonstrates the value of employing a combination of quantitative and qualitative research approach in business research. In the development of the model linking TQM, marketing and organizational performance, a review of extant literature was conducted. The development of the research constructs in the study followed the
procedures suggested by several researchers (e.g. Churchill 1979; Gerbing and Anderson 1988) in developing the three measurement scales. A pretest of the seventy-eight items survey instrument was conducted with thirty-five respondents. Reliability test and item-total correlation were used to evaluate the measures, resulting in elimination of two items in the organizational performance construct because of the irrelevancy of the items and the insufficient knowledge of the respondents to respond. Confirmatory factor analyses were subsequently conducted on the data collected from 304 respondents in the formal launch of the survey research. Validity and reliability assessments were performed, and the final results were the generation of three scales that have been assessed as being both valid and reliable.

This study was successful in developing and validating measures of total quality orientation, market orientation and organizational performance. The three scales validated and reconfirmed in the study provide a basis for future exploration of these constructs that can be used in further management studies. In addition to being used for further study of TQM/marketing management interface, the scales may have applications in other areas. For example, total quality orientation is a construct frequently mentioned but seldom operationalized in the quality literature. The scale of total quality orientation developed and validated in the study would seem to be just as applicable to measure business excellence as compared to quality awards (e.g. MBNQA). The other scales may also be helpful in studying their underlying constructs in other contexts.

Furthermore, the research model linking TQM, marketing and organizational performance developed in the study was tested and validated by structural equation modeling technique (e.g. LISREL). The analyses of the paths in the model provide solid support for the proposed relationships, except the TQOR - PERFORM path. The resulting model is consistent with the existing theory and supported by salient themes in the depth interviews triangulated with four cases of different levels of TQOR/MARKOR alignment. The scales validated in the study are fruitful to future exploration of relationships of TQM, marketing and performance in organizations.
In summary, by productively combining literature review, survey research and case studies, the study overcomes the limitations of previous research and provides a new perspective for TQM and marketing research.

7.5 Research Implications

Implications of the study are many and are here classified into two categories, they are academic implications and managerial implications.

7.5.1 Academic Implications

The academic implications of the study are mainly suggestions on how the academia must become proactively involved with TQM and marketing and recognize the importance of TQM/marketing management interface in organizations. This involves more than including TQM and marketing as a topic or chapter of a text. Rather the roles of the two management approaches in organizations and their complementary nature must be recognized. Traditionally, education in marketing and quality has been aimed primarily at students or practitioners of certain specialized organizational functions with emphasis on functional practices. For examples, advertising, promotion, and distribution management for marketing. An organization-wide focus on both the management approaches of TQM and marketing should be addressed, and the ways that TQM and marketing can and should guide the values and attitudes, and ultimately the activities and performance of the whole organization should be recognized. The philosophical elements of TQM and marketing need to be communicated both to the quality and marketing specialists, and other organizational members to discourage “departmental focus”, in order to broaden appreciation of TQM and marketing in their business operations. Practical and strategic methods to implement TQM and marketing must be developed and introduced to both the TQM and marketing disciplines. This involves increased empirical research as well as conceptual pieces on the essence of TQM/marketing management interface.

The study provides insights for TQM and marketing implementation and their linkages for management education. The marketing concept and market orientation should be stressed as quality practitioners may not have an academic background that
would include these concepts. The same also applies to marketers for quality related concepts and techniques. As achievement of customer satisfaction requires organization-wide efforts, TQM/marketing management interface should be stressed and understood. Not only should they be taught in academia, they should be constantly reinforced in the workplace in light of the fact that quality improvement and marketing activities performed for customer satisfaction are the responsibility of every organization member instead of being confined to some specialized departments.

7.5.2 Managerial Implications

Several studies have identified positive relationship between TQM and organizational performance (e.g. Powell 1995), and between implementation of marketing and organizational performance (e.g. Narver and Slater 1990). The study confirms the relationship for marketing but not for TQM in the quantitative research. However, the complementary nature of quality management and marketing is identified and supported in the study. The correlation between total quality orientation and market orientation in organizations is proved to be very strong that firms would benefit greatly from a strong market oriented focus to implement TQM fully and correctly. The contention that quality management (without market focus) would directly benefit organizational performance is not supported in the study, its performance impact is driven through market orientation. This supports the notion that organizations would benefit from being market-oriented. Should firms elect to be total quality-oriented and market-oriented? The study supports the position that high level of TQOR/MARKOR alignment in organizations would lead to greater level of organizational performance with respect to market, productivity, employee motivation and societal performance.

The role of TQM should expand and bring the quality discipline into the marketing area. The same also applies to the marketing discipline for TQM. It should be understood that the boundaries of marketing include quality and quality implementation. Marketing should take advantage of the systems, tools, and techniques in the quality discipline to improve marketing function and activities. Alternatively, there is a need for greater participation by marketing in quality
improvement process. Marketing possesses expertise about customers that can make valuable contributions to TQM. Marketing intelligence generated must be shared with other functional areas to enhance customer value and increase customer satisfaction. The areas that marketing can contribute to quality management are numerous, for example, information generation, information monitoring, and the feedback system.

A key managerial implication of the study is the focus on TQM/marketing management interface. Management practices of organizations with different degree of TQOR/MARKOR alignment were illustrated and the factors differentiating high and low performers were identified. It was found that the degree of TQOR/MARKOR alignment in organizations positively and significantly affects organizational performance. There is no magic formula to ensure success at quality management and marketing practices. The findings indicate that management can be very influential, through its commitment and involvement, organization of systems, and continuous focus on process improvement in the implementation of TQM and marketing. It is suggested that being aware of the organizational dynamics that discriminate high and low performers including top management commitment and involvement, organization of systems, and continuous focus on process improvement, the chance to achieve high level of TQOR/MARKOR alignment in organization is increased.

On the application side, the total quality orientation scale and the market orientation scale adopted and validated in the study can be used to establish baseline level, that is, to provide a starting point for management to assess the level of quality management and marketing implementation in organization. The scales also provide a measure to assess the strengths and weaknesses of a firm's total quality orientation and market orientation. The scales can be used to chart how the new or existing management practices are implemented and the degree of implementation changes. To steer resources into the right place to gain the most improvement, the organizational performance scale created and verified in the study can also be used to gauge organizational performance in organization. In addition to charting progress, the scales can help management to develop target levels that are feasible for the organization. These measures enable organizations to identify problem areas related to the components and implementation of TQM and marketing and help to address any problems identified with future intervention efforts.
7.6 Limitations of the Study

This study is subject to several shortcomings that limit interpretation of the results. It is important to consider this study in terms of its limitations. The following subsections discuss the limitations of the study.

7.6.1 Research Design

This study used cross-sectional design for survey research in the quantitative phase and collected data by cross-sectional mail survey which captured perceptions of managers at a point in time. Although survey research may be helpful in predicting relationships among variables, causal relationships among the constructs on temporal dimension cannot be determined. While the survey research provides valuable insights, it is impossible to prove causal relationships among the constructs of interest on a longitudinal basis. Though case investigations in the qualitative phase adopted a more retrospective approach with a few selected companies for in-depth studies, the cross-sectional design cannot allow inferences about the true nature of the casual relationships among the constructs of total quality orientation, market orientation, and organizational performance. The three constructs are dynamic in nature and include element of time and might be better examined over an extended period of time. The cross-sectional data does not capture any continuous transformations that might affect the hypothesized relationships. For example, the market orientation of a firm could be increasing or decreasing and total quality orientation could be increasing because of continuous improvement. There may also be lagged effects of the relationships among the three constructs of total quality orientation, market orientation and organizational performance. The dynamism of these constructs would be better captured by a longitudinal study. However, the greater cost of a longitudinal study, particularly in terms of time, did not seem warranted for the purpose of this study.

Considering that TQM/marketing management interface has been changing and evolving because of continuous improvement, a longitudinal study would be profitable in determining the impact of TQM/marketing interaction on organizational performance in future research. However, the study provides a strong foundation for
future research and might be modified for longitudinal study if the temporal relationships between variables of interest can be substantiated theoretically.

The other methodological approach, i.e. the case studies, results in some additional limitations. The case sites selected represented organizations known to have some forms of quality management systems. While capturing most of the theoretical issues to be compared and contrasted in the cases, it provided only limited examples of answers to many of the key questions. For example, some organizations may have achieved excellent performance, but they do not label their management approaches TQM or market-oriented management.

7.6.2 External Factors and Moderating Variables

The theoretical model developed in the study includes only the major latent constructs. These major latent constructs are total quality orientation, market orientation and organizational performance. In order to examine the interrelationships among them, other important macro variables such as business and economic environment, national culture and technological intensity were left out. Omission of influential macro variables might lead to spurious results. Inclusion of these moderating variables into model testing may provide further insights of the relationships among TQM, marketing and organizational performance.

7.6.3 Perceptual Measures

Another limitation of the study is the use of subjective, self-report indicators of the constructs in the survey research. While construct measures using objective indicators such as cost, defect rates and lead times, may yield improved precision, these measures are also sensitive and difficult to reveal for respondents. The trade-off is that objective measures tend to bring low survey response rate. Though objective data and documentary evidence were collected in the qualitative phase of the study with selected groups of companies, the survey research in the quantitative phase of the study totally relied on the executives' "self-report" regarding the levels of total quality orientation and market orientation, and the organizational performance in their organizations. The findings concerning management practices in the survey research
were based on the respondents’ perceptions of their own use of quality and marketing management approaches. Although an attempt was made to identify the best respondents for the various types of information gathered, the accuracy of self-perceptions might be strongly influenced by the respondents’ frame of reference and experience with the management practices in their organizations. Importantly, respondents in organizations with high reputation in quality or marketing management might be inclined to believe that their quality management or marketing practices are also advanced. In this type of analysis, it might be difficult to determine the direction of causation, particularly for the variables that are more perceptual and less concrete. For example, does TQM lead to better marketing practices, or does high level of market orientation lead to better quality management?

In addition, the study does not possess the customers’ (employees’, suppliers’, and competitors’) views and perceptions of the organizations surveyed. Asking managers to report their perceptions, especially on customer and employee satisfaction items, is a related shortcoming. It would have been better to survey the customers, employees, suppliers, and competitors of the organizations concerned directly, but that was beyond the scope and budget of the study.

7.6.4. Generalization to Other Cultures

The results of the study may not be generalized into the larger population across cultures since the theoretical model developed in the study was tested by only one source of data, that is, data collected from the Hong Kong companies. The impact of total quality orientation and market orientation may be different in different cultural and social contexts. For example, is there any difference in the strength of total quality orientation and market orientation between organizations in Eastern countries and Western countries, or between organizations in developed countries and developing countries? The utility of the theoretical model may be tested by a cross-cultural comparison in the future studies. In this study, some of the items in the questionnaire were modified to accommodate cultural perceptions. The cultural trends may affect the behavior modifications of organizational actors, such behavior modification are bound to result in the quality management implementation particularly and also the marketing generally.
The model should be tested using other samples as well. For example, testing organizations outside the ISO-certified framework would have provided an opportunity studying the behavior of companies with high and low performance who are not explicitly labeled as TQM or market-oriented. Additional samples would help to determine if the model linking TQM, marketing and organizational performance capitalize on peculiar characteristics of the data set in the study. Model testing with different data set is needed before generalization of the results can be widely accepted.

7.7 Directions for Further Research

This study lacked the benefits of previous empirical research on aspects of TQM/marketing management interface. The study, though preliminary in nature, provides a starting point for further research in this area. Some suggestions for further research are given as a way to overcome some of the study limitations. Directions for further research are suggested in the areas of sampling, scale and construct development, and model generation.

The survey research in the study was based on a cross-sectional design. Data was collected from diverse business types across industries. The rationale for cross-sectional design across industries was to obtain sample size sufficient for analyses. As the unit of analysis in this study was business unit rather than individuals, potential sample size was expected to be small, especially if the questionnaires were distributed to a specific industry. Therefore, this study was designed to examine total quality orientation and market orientation across industries rather than in a specific industry. However, the cross-sectional design has difficulties considering the external factors specific to certain industry types and obtaining industry-specific information.

The sampling frame of the study covered all the potential TQM firms in Hong Kong. Further research in replicating this study would benefit from restricting sampling to a corporate or an industry. Knowledge would be gained on the TQM and marketing practice of a particular corporation or an industry. Another benefit is that response rate may increase by concentrating on a more homogeneous sample. Further research
should be conducted in an industry-specific setting, as some of the industry-specific results may be overlooked by the current study. This study should be extended, because the sample was wide and diverse. Industry types or industrial sectors may have affected the relationships found in the study. For example, it was observed in the qualitative research of the study that contextual factor, i.e. industry types, could have bearings on the extent to which quality management and marketing can be implemented. In the construction industry, meeting competition is based on winning contracts from tendering and fulfillment of contractual agreements is considered as satisfying customers. Quality management system and marketing practice in the construction industry can be different from other industry types (e.g. service). Therefore, further research may benefit from an industry-specific examination of the hypothesized relationships.

In addition, this study assessed information only from the perspective of the participating organizations. Consequently, it offers a self-reported, one-dimensional focus. Since the study was undertaken to understand the links of TQM, marketing and performance from the viewpoints of organizations, this approach was deemed appropriate. However, the success of the emerging management paradigms such as TQM and marketing depend on its ability to satisfy the interests of multiple stakeholders. It may, however, be important to consider a dyadic methodology, where information is obtained from various stakeholders such as customers, employees, competitors and suppliers in the future research.

Another expected research topic would be the cross-cultural comparative analysis of TQM/marketing implementation between countries or cultural groups. As globalization of world markets has accelerated, cross-cultural management problem is regarded as one of the most important issues in multinational companies. It is identified in the study that different types of industries have their own unique characteristics in the implementation of quality management and marketing. In the same vein, countries having different cultural backgrounds or different cultural groups must have their own management approaches and success factors.

Furthermore, only respondents from one culture (Hong Kong) were included in the study, again severely limiting the generalizability of the results to other cultures.
Study of TQM/marketing management interface in different cultural and social contexts not only helps to generalize findings of this study, but also contributes to determine how differences in cultural and social contexts influence the effectiveness of various systems and practices, and to what extent quality management and marketing implementation should be standardized or tailored to local conditions by multinational corporations.

Importantly, construct validity is an ever-extending process of investigation and development and is not established by a single study. Though the scales of total quality orientation, market orientation and organizational performance used in the study were shown to be adequate for the data set collected, they would benefit from further development with different set of data, especially in different cultural and social contexts. In addition to replicating the entire study, some further studies should be directed at scale development alone.

Finally, there may be other constructs (e.g. environmental conditions) that should be included in the model linking TQM, marketing and organizational performance in the study but were not because of inadequacy of theoretical background to suggest those variables. Future research should expand the model presented in the study by inclusion of other constructs such as macro variables. The elementary measurement of the various dimensions and constructs and the initial nature of the study suggest the need for further replications and validations. More empirical research is needed on the every aspect of TQM/marketing management interface. Longitudinal study is also needed to study TQM/marketing management interface on temporal dimension in order to track the management practices and results over time. This study helps to foster other research and gives insights into the benefits of multi-methods research. Finally, methods must be developed to help with strategy and implementation of quality management and marketing. It is not enough to say that TQM and marketing should be implemented. Guidance on how to proceed is needed.

7.8 Concluding Remarks

This chapter reviews the study results, gives implications of the findings, and discusses how these findings should direct TQM, marketing and future research. An
attempt was made to investigate the link between TQM and marketing in organizations and their resulting impact in Hong Kong businesses and the links have been established by the study. What do the links mean in light of the current quality movement and the emerging management paradigms?

Since the mid-1980s, various new management paradigms including TQM, reengineering, outsourcing, rightsizing, downsizing and relationship management have been introduced to improve product and service quality or to improve productivity and organizational performance. However, the pros and cons of these numerous concepts are still not clearly identified. From this point of view, attempts to define the relationships between those relatively new management paradigms with TQM and marketing can be another promising topics for future research. This study is concluded by looking at the recent quality movement and those new management paradigms. They have important implications for TQM and marketing.

Instead of ignoring those emerging management thoughts, they open up additional avenues for research in implementation of quality management and marketing in organization. Along with the limitations of the study and suggestions for further research, the recent quality movement and the new management concepts, research opportunities in TQM/marketing management interface are numerous. It is hoped that the findings of the study could provide insights into TQM/marketing management interface and arouse future research interest in this area.
References


Golomski, W.A. “Quality improvement of marketing”. Quality Progress, June, pp.24-26 (1986).


Hayes, R.H. and Clark, K.B. “Explaining observed productivity differentials between plants: implications for operations research”. Interfaces, Vol.15, No.6, November-December, pp.3-14 (1985).


Orsini, J.L. “Make marketing part of the quality effort”. Quality Progress, Vol.27, April, pp.43-46 (1994).


Appendices
Appendix A - Survey Questionnaire for Quantitative Research

This study investigates into the interactions of total quality management (TQM) and marketing practices on organizational performance. An organization can be defined as an entity, a large corporation, or a business unit of a large corporation. You are required to indicate your degree of agreement or disagreement with the survey questions for your organization (if whole organization is accredited), or for the business unit of the organization which is certified to quality management system such as ISO 9000 series. This questionnaire consists of four sections. Section 1 measures the level of TQM being implemented in your organization. Section 2 measures the level of good marketing practices in your organization. Section 3 measures your perceived organizational performance. Section 4 focuses on the general information of your organization. The words organization and company are used interchangeably in this questionnaire. It may be helpful to read through the items before responding, and to clarify any items which might be unclear.

Section 1: Total Quality Orientation

This part of questionnaire includes the elements that are generally considered as the critical components of TQM. The items that represent these are listed on the following statements and are used to measure the level of total quality orientation in your organization. Please circle, on a scale of 1 “Strongly Disagree” to 5 “Strongly Agree”, the number which best represents your degree of agreement or disagreement with the following statements.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
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</thead>
</table>

1. Strategic human resources management (e.g. education, training, and employee involvement schemes) is a key performance objective of our company.

2. Our company monitors the effectiveness of the quality education and training which support company’s quality and performance objectives.

3. Our company uses employee recognition and performance measurement schemes (e.g. frequent evaluation of employee participation in quality improvement) which support company’s quality and performance objectives.

4. Our company employs proactive customer relations (e.g. market research, follow-up with customers, and use of customer service standards) i.e. frequent use of customer information to improve customer satisfaction.

5. Our company audits suppliers’ quality (e.g. by first party audits, management reviews, inspection, and accreditation to ISO series).

6. Our company takes actions (e.g. providing rapid information and data exchange) to assist and improve the quality and responsiveness of our suppliers.

7. Our company considers suppliers as associates rather than as adversaries (e.g. by reliance on few dependable suppliers, development of long-term relations, involvement in the design/development process).
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<tr>
<td>8.</td>
<td>Our company employs quality costs (e.g. appraisal, prevention, and failure) to facilitate the continuous improvement processes.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>Our company assesses the need for quality education and training (e.g. on-the-job performance improvement, employee growth) and its subsequent delivery and review.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10.</td>
<td>Benchmarking of processes in non-competing organizations for process improvement is practiced in our company (e.g. learn best practice outside the company’s industry).</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11.</td>
<td>Our company interacts with outside groups (e.g. education, business, trade, professional groups) for mutual benefits of quality improvement.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12.</td>
<td>Our company promotes trust and confidence in our products/services (e.g. by quality policy, third party assurance, guarantees, and warranties).</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13.</td>
<td>Our company evaluates competitors with respect to the level of customer satisfaction (e.g. by company-based competitive studies, evaluations made by independent organizations including customers).</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>14.</td>
<td>Our company evaluates customer satisfaction with internal performance objectives (e.g. by comparisons with past customer satisfaction index or standard set).</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>15.</td>
<td>Our company determines and improves customer satisfaction (e.g. by identifying market segments, benefits sought by customer groups, and the target quality requirements of each segment or group).</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>16.</td>
<td>Benchmarking of direct competitors’ products/services for improvement of own products/services is practiced in our company (e.g. learn best practice within the company’s industry).</td>
<td>1</td>
<td>2</td>
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<tr>
<td>17.</td>
<td>Benchmarking of direct competitors’ processes for improvement of own processes is practiced in our company (e.g. learn best practice within the company’s industry).</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>18.</td>
<td>Our company recognizes its social responsibilities such as public health and safety, environmental protection, and waste management (e.g. by including its public responsibilities in its quality policy and practice).</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td>19.</td>
<td>Our company determines customers’ future requirements and the relative importance of product/service features (e.g. by survey, focus group, dialogue with customers).</td>
<td>1</td>
<td>2</td>
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<td></td>
<td>Description</td>
<td>Strongly Disagree</td>
<td>Strongly Agree</td>
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<tr>
<td>20.</td>
<td>Our company’s new product/service development process is designed to ensure satisfaction of customer needs (e.g. by tools such as quality function deployment, venture team, new product development committee).</td>
<td>1 2 3 4 5</td>
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<tr>
<td>21.</td>
<td>Our company uses process capability studies to ensure that product/service design requirements are delivered by the processes.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>22.</td>
<td>Our managers take active leadership in coaching, encouraging, communicating and promoting quality issues (e.g. frequent reinforcement of the company’s quality value).</td>
<td>1 2 3 4 5</td>
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<td>23.</td>
<td>Satisfaction of intrinsic rewards (e.g. employee job satisfaction, sense of achievement) for employees is considered as a critical factor for attaining our company’s quality objectives.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>24.</td>
<td>Satisfaction of extrinsic rewards (e.g. pleasant working conditions, job security, fair salary and promotion) for employees is considered as a critical factor for attaining our company’s quality objectives.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>25.</td>
<td>Our top management commits to quality improvement through involvement and visibility in quality activities and communication of quality values (e.g. frequent involvement and reinforcement of quality value within and outside the company).</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>26.</td>
<td>Our company implements long-term plans (3 years or more) which are based on customer needs.</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>27.</td>
<td>Our company implements long-term plans (3 years or more) which are based on company capabilities.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>28.</td>
<td>A continuous improvement program of processes based on objective analysis of operational performance (e.g. improved cycle time, productivity, and waste reduction) is carried out in our company.</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>29.</td>
<td>Our company uses non-hierarchical organizational structures (e.g. councils, quality circles, steering committees, and quality improvement teams) to support quality improvement.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
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<tr>
<td>30.</td>
<td>Work is organized in our company according to key business processes which reflect customer needs, rather than on traditional specialization of functions.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>31.</td>
<td>Our company implements short-term plans (1 to 2 years) which are based on customer needs.</td>
<td>1 2 3 4 5</td>
<td></td>
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</tr>
<tr>
<td>32.</td>
<td>Our company implements short-term plans (1 to 2 years) which are based on company capabilities.</td>
<td>1 2 3 4 5</td>
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</tbody>
</table>
33. Quality goals, measurable and time-based (e.g. reduction of failure costs by 10% within the next six months) are included in the development of our short-term plans (1 to 2 years).

34. Our company evaluates and improves its products/services.

35. Our company evaluates and improves its business processes.

36. Our company manages data/information (e.g. data/information on quality improvement, customer and employee relations, supplier relations) to support quality improvement efforts.

37. Our company employs procedures (e.g. regular reviews and time updates) to ensure reliability, consistency, and rapid access to data and information throughout the company.

38. Quality goals, measurable and time-based (e.g. increase in customer satisfaction by 20% within the next three years) are included in the development of our long-term plans (3 years or more).

39. The quality culture (e.g. common value, belief, and behaviors) in our company is company wide.

Section 2: Market Orientation

This part of questionnaire includes the elements that are generally considered as the critical components of good marketing practice. The items that represent these are listed on the following statements and are used to measure the level of market orientation in your organization. Please circle, on a scale of 1 “Strongly Disagree” to 5 “Strongly Agree”, the number which best represents your degree of agreement or disagreement with the following statements.

1. Our company meets customers at least once a year to find out what products/services they will need in the future.

2. Our company conducts all related market research (e.g. needs analysis of customer groups, market segments) necessary for effective customer satisfaction.

3. Our company is slow to detect changes in our customers’ product/service preference.

4. Our company polls customers at least once a year to assess the quality of our products/services.
5. Our company is _slow_ to detect fundamental shifts in our industry (e.g. competition, technology, regulation).

6. Our company periodically reviews the likely effect of changes in our business environment on customers (e.g. regulation, competition, technology).

7. Our company holds interdepartmental meetings at least once a quarter to discuss market trends and developments.

8. Our company’s marketing personnel spends time discussing customers’ future needs with the other functional departments.

9. When something important happens to a major customer in our market, the whole company knows about it within a short period.

10. Our company disseminates data on customer satisfaction at all levels in the company on a regular basis.

11. When one department finds out something important about the market (e.g. customers, competitors), it is _slow_ to alert the other departments.

12. It takes our company a _long_ time to decide how to respond to our competitors’ price changes.

13. For one reason or another, our company tends to _ignore_ changes in our customer’s product/service needs (e.g. make _no_ response to the changes).

14. Our company periodically reviews our product/service development efforts to ensure that they are in line with what customers want.

15. Several departments get together periodically to plan a response to changes taking place in our business environment.

16. If a major competitor of our company was to launch an intensive campaign targeted at our customers, our company would implement a response immediately.

17. The activities of the different departments in our company are well coordinated.

18. Our company takes _no_ action on customer’s complaints.

19. Even if our company came up with a good marketing plan, our company probably would _not_ be able to implement it in a timely fashion.

20. When our company finds that customers would like us to modify a product/service, the departments involved make concerted efforts to do so.
Section 3: Organizational Performance

This part of questionnaire includes the elements that are generally considered as the surrogate of organizational performance. The items that represent these are listed on the following statements and are used to measure the perceived performance of your organization. Please circle, on a scale of 1 “Strongly Disagree” to 5 “Strongly Agree”, the number which best indicates your degree of agreement or disagreement with the following statements as they relate to your organizational performance in the past three years.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>1. The equity of our company (e.g. wage, promotions, fringe benefits) to employees has been continuously improving in the past three years.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>2. The training function provided to employees for the acquisition of necessary job skills and knowledge has been continuously improving in the past three years.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>3. The extent of employee job satisfaction has been continuously improving in the past three years.</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>4. The extent of employee job security has been continuously improving in the past three years.</td>
<td>1 2 3 4 5</td>
<td></td>
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<tr>
<td>5. The environmental factors affecting the job (e.g. safety of the job environment) have been continuously improving in the past three years.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>6. The success rate of our company in introducing new or modified products/services to satisfy customer needs has been continuously improving in the past three years.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>7. The price of the products/services of our company has remained relatively competitive to the price trend of the competitors in the past three years.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>8. The ability of our company to satisfy customer needs has been continuously improving in the past three years (e.g. decrease in customer complaints, product returns).</td>
<td>1 2 3 4 5</td>
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<tr>
<td>9. The efficiency of materials usage of our company (e.g. ratio of total output to material input) has been continuously improving in the past three years.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>10. The efficiency of labor of our company (e.g. ratio of total output to labor input) has been continuously improving in the past three years.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>11. The efficiency of capital utilization of our company (e.g. ratio of total output to capital input) has been continuously improving in the past three years.</td>
<td>1 2 3 4 5</td>
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<tr>
<td>12. The level of consumer rights of our company has been continuously increasing in the past three years.</td>
<td>1 2 3 4 5</td>
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</table>
13. The level of recognition of the need to protect the environment in our company has been continuously increasing in the past three years.  
   1 2 3 4 5

14. The expansion of the product/market of our company has been continuously increasing in the past three years.  
   1 2 3 4 5

15. The provision of employment opportunity by our company has been continuously increasing in the past three years.  
   1 2 3 4 5

Section 4: Organization Detail

This section aims to know more about you and your business unit/organization. Your answer will be used for classification purpose only.

1. The name of your business unit/organization is:

2. How do you describe the nature of business of your business unit/organization?
   a) Manufacturing  
   b) Services  
   c) Construction  
   d) Public/Utilities

3 (i) Does your business unit/organization have a formal quality program?
   Not at all 1 2 3 4 5 To a great extent

(ii) In which year did your business unit/organization initiate quality management program?

(iii) How do you describe the quality management program of your business unit/organization?
   a) Quality control  
   b) Quality assurance  
   c) Total Quality Management  
   d) Other (please specify)
4. How do you describe the nature of business orientation of your business unit/organization?
   a) Production orientation  b) Sale orientation  c) Market orientation
d) Other (please specify)

5. Your name and your job title:

6. What is your telephone and/or fax number?

7. What is the number of employees in your business unit/organization (approximately)?
   a) Below 100  b) 100-999  c) 1000-4999
d) 5000 or above

8. What is the level of turnover (HKD) achieved by your business unit/organization in the last financial year (approximately)?
   a) below 1 million  b) 1-10 million  c) 10-100 million
d) over 100 million

9. Are you willing to participate in the further stage of this research?
   a) Yes  b) No  c) Not yet decided, contact me later

Please return this questionnaire within two weeks, and if possible attach your business card, using the self-addressed stamped envelop provided or fax (2765 0611), to:

Mike Lai, Department of Business Studies, The Hong Kong Polytechnic University, Hung Hom, Kowloon.

Thank you for your participation in this study

<< End of Questionnaire>>
Appendix B - List of Questionnaire Items and their Codings by Constructs

TQOR Total Quality Orientation

**TQ1 People and Customer Management**

**P1** Strategic human resource management (e.g. education, training, and employee involvement schemes) is a key performance objective of our company.

**P2** Our company monitors the effectiveness of the quality education and training which support company’s quality and performance objectives.

**P3** Our company uses employee recognition and performance measurement schemes (e.g. frequent evaluation of employee participation in quality improvement) which support company’s quality and performance objectives.

**P4** Our company employs proactive customer relations (e.g. market research, follow-up with customers, and use of customer service standards) i.e. frequent use of customer information to improve customer satisfaction.

**TQ2 Supplier Partnership**

**S1** Our company audits suppliers’ quality (e.g. by first party audits, management reviews, inspection, and accreditation to ISO series).

**S2** Our company takes actions (e.g. provide rapid information and data exchange) to assist and improve the quality and responsiveness of our suppliers.

**S3** Our company considers suppliers as associates rather than as adversaries (e.g. by reliance on few dependable suppliers, development of long-term relations, involvement in the design/development process).

**TQ3 Communication of Improvement Information**

**I1** Our company employs quality costs (e.g. appraisal, prevention, and failure) to facilitate the continuous improvement processes.

**I2** Our company assesses the needs for quality education and training (e.g. on-the-job performance improvement, employee growth) and its subsequent delivery and review.

**I3** Benchmarking of processes in non-competing organizations for process improvement is practiced in our company (e.g. learn best practice outside the company’s industry).

**I4** Our company interacts with outside groups (e.g. education, business, trade, professional groups) for mutual benefits of quality improvement.
TQ4  Customer Satisfaction Orientation

C1  Our company promotes trust and confidence in our products/services (e.g. by quality policy, third party assurance, guarantees, and warranties).

C2  Our company evaluates competitors with respect to the level of customer satisfaction (e.g. by company-based competitive studies, evaluations made by independent organizations including customers).

C3  Our company evaluates customer satisfaction with internal performance objectives (e.g. by comparisons with past customer satisfaction index or standard set).

C4  Our company determines and improves customer satisfaction (e.g. by identifying market segments, benefits sought by customer groups, and the target quality requirements of each segment or group).

C5  Benchmarking of direct competitors’ products/services for improvement of own products/services is practiced in our company (e.g. learn best practice within the company’s industry).

C6  Benchmarking of direct competitors’ processes for improvement of own processes is practiced in our company (e.g. learn best practice within the company’s industry).

TQ5  External Interface Management

E1  Our company recognizes its social responsibilities such as public health and safety, environmental protection, and waste management (e.g. by including its public responsibilities in its quality policy and practice).

E2  Our company determines customers’ future requirements and the relative importance of product/service features (e.g. by survey, focus group, dialogue with customers).

E3  Our company’s new product/service development process is designed to ensure satisfaction of customer needs (e.g. by tools such as quality function deployment, venture team, new product development committee).

TQ6  Strategic Quality Management

Q1  Our company uses process capability studies to ensure that product/service design requirements are delivered by the processes.

Q2  Our managers take active leadership in coaching, encouraging, communicating and promoting quality issues (e.g. frequent reinforcement of company’s quality value).
Q3  Satisfaction of intrinsic rewards (e.g. employee job satisfaction, sense of achievement) for employees is considered as a critical factor for attaining our company's quality objectives.

Q4  Satisfaction of extrinsic rewards (e.g. pleasant working conditions, job security, fair salary and promotion) for employees is considered as a critical factor for attaining our company's quality objectives.

Q5  Our top management commits to quality improvement through involvement and visibility in quality activities and communication of quality values (e.g. frequent involvement and reinforcement of quality value within and outside the company).

Q6  Our company implements long-term plans (3 years or more) which are based on customer needs.

Q7  Our company implements long-term plans (3 years or more) which are based on company capabilities.

Q8  A continuous improvement program of processes based on objective analysis of operational performance (e.g. improved cycle time, productivity, and waste reduction) is carried out in our company.

TQ7  Teamwork Structures for Improvement

T1  Our company uses non-hierarchical organizational structures (e.g. councils, quality circles, steering committees, and quality improvement teams) to support quality improvement.

T2  Work is organized in our company according to key business processes which reflect customer needs rather than on traditional specialization of functions.

TQ8  Operational Quality Planning

O1  Our company implements short-term plans (1 to 2 years) which are based on customer needs.

O2  Our company implements short-term plans (1 to 2 years) which are based on company capabilities.

O3  Quality goals, measurable and time based (e.g. reduction of failure costs by 10% within the next six months) are included in the development of our short-term plans (1 to 2 years).
TQ9 Quality Improvement Measurement Systems

M1 Our company evaluates and improves its products/services.

M2 Our company evaluates and improves its business processes.

M3 Our company manages data/information (e.g. data/information on quality improvement, customer and employee relations, supplier relations) to support quality improvement efforts.

M4 Our company employs procedures (e.g. regular reviews and time update) to ensure reliability, consistency, and rapid access to data and information throughout the company.

TQ10 Corporate Quality Culture

W1 Quality goals, measurable and time based (e.g. increase in customer satisfaction by 20% within the next three years) are included in the development of our long-term plans (3 years or more).

W2 The quality culture (e.g. common value, belief, and behaviors) in our company is company wide.

MARKOR Market Orientation

MO1 Market Intelligence Generation

G1 Our company meets customers at least once a year to find out what products/services they will need in the future.

G2 Our company conducts all related market research (e.g. needs analysis of customer groups, market segments) necessary for effective customer satisfaction.

G3 Our company is slow to detect changes in our customers' product/service preference.

G4 Our company polls customers at least once a year to assess the quality of our products/services.

G5 Our company is slow to detect fundamental shifts in our industry (e.g. competition, technology, regulation).

G6 Our company periodically reviews the likely effect of changes in our business environment on customers (e.g. regulation, competition, technology).
**MO2  Market Intelligence Dissemination**

D1 Our company holds interdepartmental meetings at least once a quarter to discuss market trends and developments.

D2 Our company’s marketing personnel spends time discussing customers’ future needs with the other functional departments.

D3 When something important happens to a major customer of our market, the whole company knows about it within a short period.

D4 Our company disseminates data on customer satisfaction at all levels in the company on a regular basis.

D5 When one department finds out something important about the market (e.g., customers, competitors), it is slow to alert the other departments.

**MO3  Responsiveness to Market Intelligence**

R1 It takes our company long time to decide how to respond to our competitors’ price changes.

R2 For one reason or another, our company tends to ignore changes in our customer’s product/service needs (e.g., take no response to the changes).

R3 Our company periodically reviews our product/service development efforts to ensure that they are in line with what customers want.

R4 Several departments get together periodically to plan a response to changes taking place in our business environment.

R5 If a major competitor of our company was to launch an intensive campaign targeted at our customers, our company would implement a response immediately.

R6 The activities of the different departments in our company are well coordinated.

R7 Our company takes no action on customer’s complaints.

R8 Even if our company came up with a good marketing plan, our company probably would not be able to implement it in a timely fashion.

R9 When our company find that customers would like us to modify a product/service, the departments involved make concerted efforts to do so.
PERFORM Organizational Performance

**OP1 Motivation Performance**

K1 The equity of our company (e.g. wage, promotions, fringe benefits) to employees has been continuously improving in the past three years.

K2 The training function provided to employees for the acquisition of necessary job skills and knowledge has been continuously improving in the past three years.

K3 The extent of employee job satisfaction has been continuously improving in the past three years.

K4 The extent of employee job security has been continuously improving in the past three years.

K5 The environmental factors affecting the job (e.g. safety of the job environment) has been continuously improving in the past three years.

**OP2 Market Performance**

N1 The success rate of our company in introducing new or modified products/services to satisfy customer needs has been continuously improving in the past three years.

N2 The price of products/services of our company has been remaining relatively competitive to the price trend of the competitors in the past three years.

N3 The ability of our company to satisfy customer needs has been continuously improving in the past three years (e.g. decrease in customer complaints, product returns).

**OP3 Productivity Performance**

Y1 The efficiency of materials usage of our company (e.g. ratio of total output to material input) has been continuously improving in the past three years.

Y2 The efficiency of labor of our company (e.g. ratio of total output to labor input) has been continuously improving in the past three years.

Y3 The efficiency of capital utilization of our company (e.g. ratio of total output to capital input) has been continuously improving in the past three years.
**OP4 Societal Performance**

L1 The level of consumer’s rights of our company has been continuously increasing in the past three years.

L2 The level of recognition of the need to protect the environment in our company has been continuously increasing in the past three years.

L3 The expansion of the product/market of our company has been continuously increasing in the past three years.

L4 The provision of employment opportunity by our company has been continuously increasing in the past three years.
Appendix C - Case Studies Questionnaire for Qualitative Research

Please be ensured that the information given in this questionnaire will be kept strictly confidential.

Name:

Job Title:

Name of Organization:

Organization Address:

Telephone No.:

Section 1 Background

1) Is <Organization Name> H.K. or non - H.K. owned?
   a) H.K owned  b) Non - H.K. owned  Please specify nationality

2) Is <Organization Name> part of a larger organization? Yes:No
   If 'yes' please give the name of the holding organization

3) What is the business nature of <Organization Name>?
   a) Service  b) Manufacturing  c) Construction  d) Utilities Public Sector

4) What is the main area of <Organization Name> activities? Please briefly describe
   (Can I have a brochure of your company)

5) How long <Organization Name> has been operating in Hong Kong?

6) Number of employees in <Organization Name>?

7) Turnover achieved by <Organization Name> in the last financial year?

Section 2 General Information of Quality management in Organization

1) When did <Organization Name> start implementing quality management?

2) What factors initiated <Organization Name> adopting quality management?

3) What is the mission statement of <Organization Name>? would most employees know it
   (in what *a*)?

4) How does the mission statement link to the quality management of <Organization Name>??

5) Is there any policy guideline in <Organization Name> for the achievement of the organizational
   mission?

6) Is there any quality policy in <Organization Name>? Yes:No

   - If yes, in which year did the quality policy begin? Is this policy in writing? Yes:No (Can I have a
     copy)

   - Do all the employees have a copy of (or an access to) this policy? Yes:No

   - Have <Organization Name> documented procedures and work instruction manuals?
7) Who is the most senior person in <Organizational Name> responsible for quality e.g. Quality director, Quality Manager, Works Manager? to whom does this person report e.g. CEO?

8) Does <Organizational Name> have a separate quality assurance department? Yes/No. How many staff does the department have?

- If <Organizational Name> does not have a quality assurance department, which department looks after quality?

Section 3 Total Quality Orientation in Organization

1. Does <Organizational Name> provide training to support the key performance objectives? how (e.g. education, employee involvement scheme)? does the training provided cover all the employees? if “no” why?

2. Does <Organizational Name> monitor the effectiveness of the quality related training provided? how? how often? if “no” why?

3. Does <Organizational Name> encourage employee participation to support the key performance objectives? how (e.g. employee recognition and performance schemes)? do the schemes cover all the employees? if “no” why?

4. Does <Organizational Name> employ proactive customer relations for improvement of customer relations and satisfaction? in what forms (e.g. market research, service standard set, follow up with customers)? if “no” why?

5. Does <Organizational Name> audit supplier’s quality? how (e.g. first party audits, inspection, accreditation to ISO)? how often? if “no” why?

6. Does <Organizational Name> take actions to improve quality and responsibility of suppliers? how (e.g. provide rapid information exchange)? How often? if “no” why?

7. Does <Organizational Name> consider suppliers as partners? how (e.g. dependent on few suppliers, joint development process)? if “no” why?

8. Does <Organizational Name> use quality costs to facilitate quality improvement? how (e.g. appraisal, prevention, failure)? if “no” why?

9. Does <Organizational Name> assess the needs for quality education and training (e.g. on-the-job improvement, employee growth)? how? how often? if “no” why?

10. Does <Organizational Name> use benchmarking for performance improvement? in what aspects (product, service, process)? with whom (competitor, industry standards)? how often? if “no” why?

11. Does <Organizational Name> interact with outside groups for mutual benefits of quality improvement? with whom? in what forms? how often? if “no” why?

12. Does <Organizational Name> promote trust and confidence in the products/services provided? in what forms (e.g. quality policy, third party assurance, guarantees, and warranties)? if “no” why?


14. Does <Organizational Name> determine and improve customer satisfaction? how (e.g. by market segment, benefits sought, target quality requirements)? how often? if “no” why?

15. Does <Organizational Name> recognize its social responsibility? in what aspects (e.g. employment, environment), how (e.g. include in policy)? if “no” why?
16. Does <Organization Name> determine customers’ future requirements, and the relative importance of product/service features? how (e.g. by survey, focus groups, dialogue with customers)? how often? if “no” why?

17. Does <Organization Name> employ new product/service development process to ensure satisfaction of customer needs? how (e.g. QFD, venture team)? if “no” why?

18. Do managers in <Organization Name> take active leadership to promote quality issues? how? how often? if “no” why?

19. Does <Organization Name> consider employee satisfaction a critical factor for attaining quality objectives? how to reward them (both extrinsic and intrinsic)? if “no” why?

20. Does top management in <Organization Name> commit to quality improvement? how (e.g. reinforcement of quality value with and outside the company)? how often? if “no” why?

21. Does <Organization Name> implement long term plans (3 years or more)? base on what criteria (customer needs, company capability)? who set them? if “no” why?

22. Does <Organization Name> carry out continuous programs for improvement of processes? in what forms? base on what operational criteria (e.g. cycle time, productivity, waste reduction)? how often? if “no” why?

23. Does <Organization Name> use non-hierarchical structure (e.g. councils, quality circles, steering committees, quality improvement teams) to support quality improvement? please describe? if “no” why?

24. Does <Organization Name> organize work according to key business processes which reflect customer needs rather than specialization of functions? how? if “no” why?

25. Does <Organization Name> implement short term plans (3 years or less)? base on what criteria (customer needs, company capability)? if “no” why?

26. Does <Organization Name> have quality goals? what are they (short and long term)? are they measurable and time based? who set them? if “no” why?

27. Does <Organization Name> evaluate and improve products/services offered? how? how often? if “no” why?


29. Does <Organization Name> manage data/information to support quality improvement efforts? in what aspects (e.g. data information on quality improvement, customers, employees, suppliers)? if “no” why?

30. Does <Organization Name> employ procedures to ensure reliability, consistency, and rapid access to data and information throughout the company? how (e.g. regular review, time update)? how often? if “no” why?

31. Is quality culture in <Organization Name> organization wide? how to achieve? if “no” why?

32. Does <Organization Name> consider total quality orientation a competitive necessity? why and why not?

33. In general, what are the factors does <Organization Name> consider important for quality improvement?
Section 4 Market Orientation in Organization

1. Does <Organization Name> meet customers' needs (future needs, quality of existing products/services) in what forms? how often? if "no" why?

2. Does <Organization Name> conduct all related market research (e.g. need analysis of customers)? how? how often? if "no" why?

3. Is <Organization Name> sensitive to the market environment? in what aspects (competition, technology, regulation)? how to detect the environmental changes? how often? if "no" why?

4. Does <Organization Name> hold interdepartmental meetings? what to discuss (customer needs, competitor actions, environmental changes)? how often? if "no" why?

5. Do marketing staff of <Organization Name> spend time discussing customers' future needs with other functional departments? how often? if "no" why?

6. Does <Organization Name> disseminate data on customer satisfaction at all levels in the company on a regular basis? how and how often? if "no" why?

7. Does <Organization Name> periodically review product/service development efforts to ensure conformance to customer expectations? how often? if "no" why?

8. Do several departments in <Organization Name> get together periodically to plan response to changes taking place in the business environment (e.g. customers, competition, technology)? how often? how to ensure connectedness of cross-functional activities? if "no" why?

9. Does <Organization Name> consider market orientation a competitive necessity? why and why not?

10. In general what are the factors does <Organization Name> consider important for being market oriented?
Section 5 Organizational Performance

1. Are the employees better off or worse off after the implementation of quality management in <Organization Name>? in what aspects (salary, training, job satisfaction, job security)?

2. Are the products/services offered (both new and existing) better off or worse off after the implementation of quality management in <Organization Name>? in what aspects (customer satisfaction, competitiveness)?

3. Is the productivity in <Organization Name> better off or worse off after the implementation of quality management? in what aspects (material, labor, capital)?

4. Is the impact of <Organization Name> on society positive or negative after the implementation of quality management? in what aspects (consumer rights, environment, market expansion, employment opportunities)?

<< End >>

Collection of Secondary Information

- Company Brochure
- Annual Report
- Quality Policy
- Quality Manual/Instruction
- Performance Indices
  - Market Related e.g. Turnover, Price Level, Competitiveness
  - Productivity Related e.g. Material, Labor, Capital
  - Employee Related e.g. Training, Job Satisfaction, Salary
  - Customer Related e.g. Satisfaction Level, Complaints, Service Level
  - Societal Related e.g. Environmental Protection Awareness, Employment Opportunities Created
Appendix D - Case Study Protocol for Qualitative Research

Case Study Protocol: Dissertation Case Study Research Plan

Objective:

These case studies (totally four in number) are intended to describe activities that have occurred or are in place. The emphasis is on understanding TQM/marketing management interface, its impact on organizational performance, and the organizational impediments that might affect the TQM/marketing relationships. The case study research methodology will be used to ascertain the ways TQM interacts with marketing in organizations with different levels of total quality orientation and market orientation. This case study research is oriented towards understanding how and why TQM and marketing interact in organizations with the intention of comparing the prescriptive literature with the empirical evidence and uncovering the factors that might affect their relationships in organizations.

Methodology:

Each case investigation will be an independent case for TQM/marketing management interface in organization. They will be developed from the actual organizational actors' experience and the perspectives of many people from different functional areas (e.g. quality, marketing, human resources) who are involved with quality improvement efforts in their organizations. The idea is to present a few cases (using responses to the mail survey, case study interviews and other written documentation) in order to triangulate different viewpoints on the performance impact of TQM from marketing perspective.

Overall, these cases should represent how quality management is related to organizational performance and marketing practice. It is anticipated that the case study generated would be of both similar and different patterns of TQM/marketing management interface in organizations with different levels of performance achieved. Four cases are selected for participation in the qualitative research and they include:

1) Two cases with both high level of total quality orientation and market orientation in organization.
2) Two cases with both low level of total quality orientation and market orientation in organization.

The case discussions are expected to yield a set of TQM/marketing practices which independently do not mean much but when taken together should give insights on the factors that might affect the achievement of high level of TQOR/MARKOR alignment in organizations.

Comparisons and contrasts between and within the above sample of organizations will be explored.
Data Collection:

The specific field research questions to be addressed are described below, but the intent is to elicit reflective evidence describing what specific practices of TQM and marketing differentiates high performers from low performers. In other words, how the ten critical components of TQM are related to the critical elements of market orientation in organizations i.e. market intelligence generation, dissemination and responsiveness to it? What factors contribute (or impede) the high level of TQOR/MARKOR alignment in organizations? How TQM and marketing affect organizational performance? What are the lessons to be learned? Again, the goal is to supplement the research survey results by collecting evidence (backed by irrefutable results) in order to provide insights for organizations implementing TQM. It is important to note that these practices are not necessarily confined to quality related professionals but to different organizational actors as TQM and marketing require organization-wide context.

I. Background

Background information regarding each of the interviewed firms must be gathered. This information should include the basic organizational information as well as who are involved in the quality and marketing activities in the case. Most of this information can be gathered a priori. In addition, it will be useful to confirm the existence of quality management in these firms based on objective data.

II. General Information of Quality Management in Organization

General information concerning quality management of the interviewed firms must be collected. This information include the quality history, quality policy, and the organizational structure for quality management. Documentory evidence e.g. quality manual, brochures should be collected to cross-check the information provided.

III. The Level of Total Quality Orientation

Initially, it will be necessary to understand the level of total quality orientation of organization before proceeding to explore its impact on organizational performance and the TQM/marketing management interface. As such, questions will be oriented along the following categories, which are the ten critical components of TQM.

1. People and customer management
2. Supplier partnerships
3. Communication of improvement information
4. Customer satisfaction orientation
5. External interface management
6. Strategic quality management
7. Team work structures for improvement
8. Operational quality planning
9. Quality improvement measurement systems
10. Corporate quality culture
Specific questions will be drawn from the question set of the large sample survey. The emphasis, however, will be in moving from the more general information elicited during the survey phase to more specific practices by asking the "how" and "why" questions. The detail of those practices will be the focus here.

IV. The Level of Market Orientation

Similarly, the level of market orientation in organizations must be understood prior to the explanation of the impact of market orientation on organizational performance and its relations with TQM practice. Questions will be focused on the three critical elements of market orientation drawn from the question set of the large sample survey. The case study questions will be more specific in nature by addressing the "how" and "why" questions. Provided below are the three categories of questions around the three critical components of market orientation.

1. Market intelligence generation
2. Market intelligence dissemination
3. Responsiveness to market intelligence

V. TQM/marketing management interface

The intent herein is to determine what the organizations in particular situation learned from their experience as they describe. It is important to ascertain how and why they have experienced their TQM and marketing practices, and to uncover the factors that might facilitate or impede high level of TQOR/MARKOR alignment in organizations. Additionally, the emphasis is on understanding what processes were actually changed as a result of the lessons learned. In particular, this section will attempt to explain the roles of TQM and marketing as they contribute to organizational performance.

VI Organizational Performance

Specific responses to the performance improvement as a result of their quality management and marketing practices are the emphasis of this facet of the case investigation. An attempt will be made to understand the relationships between TQM and marketing practices and their subsequent results on organizational performance (market, productivity, motivation, and societal).

Summary

The overall emphasis is on understanding how and why organizations with different levels of TQOR/MARKOR alignment, identified in the survey research, transform their plans, policies and procedures over time and what performance they achieve. These insights from the practitioners offer a significant opportunity to identify the critical "success" or "failure" factors for organizations implementing or intending to implement quality management to ensure performance.
Appendix E - Cover Letter for the First Round Survey Questionnaire Mailing

Date
Field (Contact)
Field (Title)
Field (Company)
Field (Address)
Field (ID No.)

Dear Field (Contact):

I am a Ph.D. candidate attached to the Department of Business Studies at the Hong Kong Polytechnic University. I am investigating the impact of Total Quality Management (TQM) implementation and its interactions with marketing practices on organizational performance in Hong Kong. The two main research purposes of the study are: 1) to measure the impact of TQM implementation on organizational performance and 2) to determine the impact of TQM from a marketing point of view.

The following questionnaire is the first part of my research. It is designed to gather information from quality managers in the real world. This questionnaire is being sent out to all potential TQM implementing organizations in Hong Kong. Quality managers’ opinions regarding the degree of TQM implementation, the degree of market orientation in their organizations and their perceptions of organizational performance will be assessed in this survey.

I would greatly appreciate your willingness to participate in this research study. I believe that your input will be a valuable contribution to the determination of effective ways to implement TQM in Hong Kong and to the advancement of theory of quality-marketing management interface on organizational performance.

It would be much appreciated that you complete the questionnaire which is estimated to take no longer than 20 minutes. Please return the completed questionnaire using the enclosed self-addressed, stamped envelop or by fax 2765 0611. I would appreciate it very much if you could return the completed questionnaire within two weeks.

The information that you provide will be treated with strict confidence. The identification number put in the questionnaire is for mailing purpose to ensure that subsequent mailing will not be sent to you. When your questionnaire is returned, your responses will be combined with those of many others and used only for statistical purposes. Only aggregated and summarized information will be reported. I am most willing to answer any questions you might have. Please fax 2765 0611 or call 2766 7947.

My Ph.D. work is being supervised by Dr. T.S. Weerakoon and Prof. Edwin Cheng (vice president, RPS) of the Hong Kong Polytechnic University. If you need any further clarification from my supervisors, please contact Dr. T.S. Weerakoon at fax: 2765 0611 or telephone: 2766 7134.

Your response is vital to the success of this study. I look forward to receiving your completed questionnaire.

Yours Sincerely,

Mike Lai
Ph.D. Candidate, Dept. of Business Studies
The Hong Kong Polytechnic University

Enclosures
Appendix F - Cover Letter for the Second Round Survey Questionnaire Mailing

Date

Field (Contact)
Field (Title)
Field (Company)
Field (Address)
Field (ID No.)

Dear Field (Contact):

This correspondence follows my earlier invitation for you to participate in my Ph.D. study. The study aims to assess the impact of Total Quality Management (TQM) implementation and its interactions with marketing practices on organizational performance. Responses to the study and the number of returned questionnaires to date have been encouraging. However, I have not yet received the completed questionnaire from your organization. Although I understand that your organization is likely a busy one, I would be grateful if the questionnaire is completed and returned.

Each questionnaire is of much significance to the study. My ability to describe the impact of TQM and its interactions on marketing practice depends on the adequacy of the sample size that I receive. Therefore, your participation will help to ensure that organizations in your industry and of your size are fairly represented in the study. In addition, the opinions given by the late respondents may differ from those of early respondents. The input from you and those who have not yet responded can enhance my ability to more accurately describe the impact of TQM and the TQM marketing management interface. I am confident that the research results will be of importance to practicing managers in improving the quality of management systems and to managers who anticipate to install quality management systems for improved organizational performance. The research questionnaire will require, at most, 20 minutes to complete. Additionally, it seeks information that you are already knowledgeable about and which needs no further investigation or elaboration. The information you provide will be treated with strict confidence. Only aggregated information combined with other organizations will be reported.

I would be very grateful if you could complete and return the questionnaire as soon as possible. You will be making a timely contribution to a research topic which appears to have a territory interest, quality improvement and competitiveness. A replacement questionnaire is enclosed in the event that my earlier correspondence did not reach you or that the previous questionnaire has been misplaced. It would be much appreciated if you could return the completed questionnaire by not later than 17 April 1998. I would be very happy to answer any questions you might have. Please fax 2765 0611 or call 2766 7947.

My Ph.D. work is being supervised by Dr. T.S. Weerakoon and Prof. Edwin Cheng (vice president, RPS) of the Hong Kong Polytechnic University. If you need any further clarification from my supervisors, please contact Dr. T.S. Weerakoon at fax: 2765 0611 or telephone: 27667134.

Look forward to your response. Thank you for your time and assistance.

Yours faithfully,

Mike Lai
Ph.D. Candidate, Dept. of Business Studies
The Hong Kong Polytechnic University

Enclosures
Appendix G - Cover Letter for Appeal for Participation in Case Studies

Date

Field (Contact)
Field (Title)
Field (Company)
Field (Address)
Field (ID No.)

Dear Field (Contact):

Thank you for returning the total quality management questionnaire sent to you in February 1998 and agreeing to participate in the next round. I have now analyzed the questionnaires returned. I am in the process of preparing an interview protocol and questionnaire for the second round of my study. As soon as the protocol and the questionnaire are ready, I will contact you to arrange a suitable date for the interviews. Very likely, this will be during the early weeks of June 1998. I would therefore appreciate very much if you could indicate some convenient dates to enable me to schedule the interviews.

Please contact me at telephone 2766 7947 or fax 2765 0611 if you need further clarifications or information regarding the forthcoming second round interviews.

Yours faithfully,

Mike Lai
Ph.D. Candidate, Dept. of Business Studies
The Hong Kong Polytechnic University
Appendix H - Criteria for Assessing Validity and Reliability of the Instrument in the Quantitative Research

In the study, unidimensionality was evaluated through the use of confirmatory factor analysis. The parameter estimates (e.g. lambda loadings) for the indicator variables were used to evaluate the degree to which the indicator variables are explained by the latent variables e.g. first order constructs, and the degree to which the first order constructs are explained by their corresponding second order constructs. The signs, magnitude and standard errors of the estimates were compared to the hypothesized relationships. The value of the parameter estimate should be high relative to the error variance value for a particular indicator variable/first order construct. Estimate for the indicators/first order constructs should be positive and statistically significant.

Confirmatory factor analysis was also used to test for convergent validity and discriminant validity. Convergent validity was assessed by determining whether each indicator’s estimated path loading (Lambda) on its proposed underlying construct is significant (Anderson and Gerbing 1988). If a scale has convergent validity, unidimensionality of the scale or factor is also evidenced. Path loading of an item with t-value of two or more demonstrates evidence of convergent validity. Discriminant validity between two constructs is supported when the correlation is less than 1.0 by an amount greater than twice its standardized error (Bagozzi and Warshaw 1990).

Path analyses in the structural model were used to evaluate nomological validity of the constructs in the study. Nomological validity is associated with the estimation of the structural model and is established if the exogenous constructs, i.e. total quality orientation and market orientation, are significantly related to the endogenous construct, i.e. organizational performance.

Reliability test using Cronbach’s alpha and item-total correlation analysis were the tools adopted in the study to assess the reliability of a measure and a cut off point for the alpha value of .7 suggested by Nunnally and Bernstein (1994) was used as a reasonable indicator of “fit”.

The criteria mentioned were only used as the indicators of acceptable fit. The criteria were not strictly adhered to in the study for a better fit of model e.g. by eliminating insignificant items. Variables in the model that fail to meet the criteria discussed above were retained if other measures, fit statistics and theory suggest retention. They were also retained if the item captures a unique aspect of the construct not captured by other variables. The rationale is that deletion of those unique items, if any, would result in alternation of the definitional domain of the construct.
Appendix I - Rationale of Using Composite Scores for Evaluation of the Higher Order Constructs and the Unidimensionality Issues

The model shown in Figure 4.1 was developed basing on substantial theory gathered from literature review. The number of observed indicator variables involved in the model (74) make it difficult to evaluate the entire model with all the observed indicators because of the complexity of the model and the identification problem. The model depicted in Figure 4.1 that represents the structural relationships among the three constructs at the second order level was estimated by the composite scores of the first order factors that serve as observable indicators.

All the three research constructs in the study (total quality orientation, market orientation and organizational performance) represent higher (second) order constructs and consist of two levels of variables. The lower (first) order variables (for example, people and customer management - TQ1, a dimension of the total quality orientation construct - TQOR) are reflected in the observed measures (for example, P1 to P4), while the second order variables (for example, total quality orientation) are reflected, or defined by the first order variables e.g. TQ1 to TQ10 (see the complete list of the variables and their codings in Appendix B). Because the overall measurement model of the three research constructs was large involving 74 indicator variables (over 20), a piecewise strategy of model evaluation suggested by Jöreskog (1993) was adopted. The strategy was to evaluate each construct separately and then develop a larger confirmatory factor model by combining the constructs, i.e. in the structural model.

For the piecewise strategy of model evaluation, a single second order factor analysis (SOFA) was considered for evaluation of the measurement properties of each of the higher order construct. However, the piecewise measurement models for the three research constructs were also large and complex involving a large number of indicator variables (e.g. 39 items for the total quality orientation construct, and 20 items for the market orientation construct). Using each indicator variable as the reflective indicator of its constructs would result in identification problem, especially for the structural model estimation involving two levels of variables in the analysis. Given the recommendation that at least five cases per parameter be used in structural equation model testing (Bentler and Chou 1988), second order factor analysis was not adopted in the study. A single second order factor analysis, for example, for evaluation of the total quality orientation construct would require 88 parameters to be estimated. The sample size (304) in the study was not adequate for the 88 parameters to be estimated (a ratio of 2.9 cases per parameter to be estimated) if a single second order confirmatory factor analysis is used to evaluate the measurement model of the total quality orientation construct.

As the number of indicator variables involved was large (over 20), a piecewise strategy of model evaluation involving two levels was used. The strategy was to evaluate each construct at the lower level by the readily indicator variables and then build a larger confirmatory factor model at the second order level which was to be evaluated by the composite scores of its first order factors, i.e. formulated by the arithmetic mean of the indicator variables. Once the lower level constructs (first order factors) were confirmed, composite scores using summed scales (e.g. means of the
indicator variables) for each lower level construct were employed to evaluate the higher level constructs. Indicator variables that demonstrated acceptable validity and reliability for the first order factors were combined into scales by taking the arithmetic mean of the indicator variables. The validity and reliability of the latent constructs were tested individually for each construct using all the indicator variables at the lower order level and the composite scores at the higher order level.

The use of composite scores for evaluation of the higher order constructs in both the measurement models and the structural model in the study can be justified. Prior to the formation of the composite scores, constructs at the lower level were tested for unidimensionality using the indicator variables. The parameter estimates for the indicator variables (e.g. lambda loadings) were used to determine the portion of the explained variance in the indicator variables which are attributable to the latent constructs they are intended to measure, i.e. the causal relationship between the indicator variables and the latent constructs. Furthermore, the reliability of the composite scores was assessed with reliability test using Cronbach’s alpha for internal consistency of items.

Indeed, the use of composite scores in conducting structural equation modeling analysis based on average of responses to individual items and then using the scores on these averaged items in the latent variable analysis has been a common practice. A number of reasons have been cited by researchers for using this technique (e.g. Bernstein and Teng 1989). First, responses to individual items are likely to violate the assumptions of multivariate normality that underlie the maximum likelihood estimation procedure often used in estimating structural equation models with latent variables. Second, analyses using individual items as measured indicators for the latent variables often necessitate estimating a large number of parameters (e.g. factor loadings and error terms) in fitting the model to the data. For example, in testing the model described in Figure 4.1 by using the 74 individual items as the measured variables, a total of 167 parameters involving two levels were estimated. Given the recommendation that at least five cases per parameter be used in testing a structural equation model (Bentler and Chou 1988), the available sample size of the study (304) was too small for testing a model with that number of parameters. Finally, by using composite scores rather than individual items, the results of the analysis are not likely to be distorted by idiosyncratic characteristics of individual items. Indeed, composite score has been widely used in academics before the development of the structural equation modeling technique (SEM). The use of composite score can be found in a variety of studies using SEM (e.g. Babin and Boles 1998; Singh 1993; Smith and Barclay 1997; Sparks and Hunt 1998). On the basis of the support for the use of composite score derived by averaging individual items, composite score was developed for each of the first order constructs and was used to evaluate the second order constructs and test the research model and the hypotheses presented in the study.
Appendix J - Rationale of Using LISREL Approach of Model Estimation

The LISREL approach of model estimation was adopted in the study because it has three primary advantages over the traditional methods (e.g. item-total correlation analysis, reliability test and traditional regression method), pertaining to the constructs’ empirical and theoretical meanings. First, it provides a test of the theoretical structure of the measurement instrument i.e. a rigorous assessment of the stability of a construct and its measurement instrument. Second, the relationships among the constructs can be tested without the bias that measurement error introduces. Third, it can simultaneously estimate all path coefficients and test the significance of each causal path by evaluating the model as a whole.
Appendix K - Selection of Matrix for Model Estimation

Jöreskog and Sörbom (1989, 1996) suggested that covariance matrix should be analyzed in structural equation modeling because the correlation matrix can be problematic. Analysis of the correlation matrix may modify the model being analyzed, produce incorrect chi-square and goodness-of-fit measures, and give incorrect standard errors. Correlation matrix is used in structural equation model for scales involving ordinal variables that require techniques such as using polychoric correlations and weighted least squares (Jöreskog 1993).

It is suggested that when variables are continuous, that is, measured on interval scales, it is best to analyze the covariance matrix rather than the correlation matrix (Jöreskog and Sörbom 1989, 1996). As the scales used in the study do not contain categorical or ordinal data, and do not appear to deviate from normality, analysis of correlation matrix was not considered for adoption. Because of the continuous nature of the scaled used and the multivariate normality of the data demonstrated, covariance matrices were used for model estimation in the study.
Appendix L - Criteria for Evaluation of Model Fit

To evaluate the degree of model fit (e.g. the measurement models and the structural model) to the data collected, certain statistics, indicators or goodness-of-fit indices were employed to evaluate how well the three piecewise measurement models and the structural model displayed in Figure 4.1 account for the data obtained from the sample. The indicators reported in the study include chi-square statistic, goodness-of-fit index (GFI), Bentler’s comparative fit index (CFI), Bentler and Bonett’s normed fit index (NFI), root mean square (RMR) and root mean square residuals (RMRs). The chi-square test is a likelihood ratio statistic for testing a hypothesized model against an unconstrained covariance matrix (Bagozzi and Yi 1988). A good model fit should have a small chi-square value relative to the associated degree of freedom. A large chi-square value suggests a bad fit while a small chi-square value implies a good fit. The degree of freedom in model estimation is used as the standard to judge the magnitude of chi-square value. A good model should have a small chi-square value that is close to its associated degree of freedom (ideally should be a 1.1 ratio), resulting in a probability of .10 or higher (Bagozzi and Yi 1988). However, the use of chi-square statistic has many limitations in model estimation (Jöreskog 1993). It is sensitive to sample size and very sensitive to departures from multivariate normality of the indicator variables (Anderson and Gerbing 1988; Bentler 1990; Bentler and Bonett 1980). It can often cause models evaluated using a large sample to be rejected as inadequate even though they might be acceptable with a small sample.

Given the limitations of chi-square statistic in model estimation, several indicators provided by LISREL 8 program which are less sensitive to sample size were employed to assess the overall model fit including GFI, CFI, NFI, and RMR. GFI indicates the amount of observed variance/covariance information that can be accounted for by the hypothesized model. It measures how much better the model fits as compared to no model at all (Jöreskog and Sörbom 1989). GFI indicates the extent to which the estimated variance and covariance are accounted for by the proposed model. Bentler’s comparative fit index (CFI), based on the work of Tucker and Lewis (1973), is a ratio of population indicators of model misspecification, i.e. noncentrality parameters. CFI evaluates the adequacy of a particular model by measuring the relative improvement in noncentrality going from the null model (model of uncorrelated latent variables), which has the worst fit, to a specific model (Bentler 1990). For a fixed null model misspecification, decreases in misspecification yield increasing values of CFI (Bentler 1990). It indicates what portion of the variance in the data is explained by the model rather than the null model. Bentler and Bonett’s normed fit index (NFI) allows for evaluation of the adequacy of a measurement model in which all possible latent variable regression structures would be embedded (Bentler and Bonett 1980). It is called a normed fit index because it is defined as a ratio of chi-square values and is scaled so that its value range from 0 to 1, with higher values indicating better fit (Bentler 1990). As with many covariance structure fit statistics, no exact guidelines are given to suggest what represents an acceptable fit with either GFI, CFI, or the NFI. In the study, the measurement models and the structural model where the GFI, CFI and the NFI exceed 0.9 were considered to have a good fit.

For the fit measures of individual component, RMR and the percentage of residuals greater than 2.0 were used. RMR is the square root of the mean of the squared
residuals, that is, the average of the residuals between observed and estimated input matrices. A residual is an observed indicator minus a fitted variance (Jöreskog 1993). A standardized residual is obtained by dividing a residual by its standard error. Residuals exist for each pair of observed indicators. A large positive residual means that the covariance between the two indicators is underestimated. A large negative residual means that the covariance is overestimated. The residuals were examined using stem-leaf plots. A good model is characterized by a stem-leaf plot with residuals that are symmetrical around zero and most of the residuals are in the middle and fewer in the tails. The goodness-of-fit criteria for the value of RMR index in the study was less than .05. In addition, the standardized root mean-square residuals (RMRs) and the percentage of residuals greater than 2.0 provide indications of detailed construct fit. Residuals were computed in LISREL 8 by subtracting the fitted variance from the observed variance. Stem-leaf plots were examined to get the percentage of standardized residuals greater than 2.0.

Though the above criteria for the goodness-of-fit measures for structural equation model testing were used in the study, they were not strictly enforced during the measure development process. Cautions addressed in Appendix H were taken into account when using these criteria. Decisions to respecify the model, eliminate items from the model, depended also on theoretical support and other criteria of "fit" for example Cronbach's alpha and item-total correlation.
Appendix M – Multiple Sources Data Collection Method in Qualitative Research

The qualitative research involved multiple forms of data collection. These included company policy, annual report, in-house documents such as company brochures, memos, newspapers, magazine articles, archival records, interviews and direct observations. Multiple sources data collection method allows a more thorough examination of each organization addressing a broader range of historical, attitudinal, and observational issues than it is solely based on survey research (Yin 1994 p.79). The use of multiple evidence in the qualitative research may be considered as "multiple methods" of operationalization and may be viewed as triangulation.

The multiple sources data collection method helped to prevent subjective bias in the study by providing a means of methodological triangulation for verifying or confirming results from the survey research in the first phase of the study. The goal of such triangulation was to evaluate a theory more accurately by "sighting in on it from different methodological viewpoints" (Brewer and Hunter 1989. p.17). If the hypothesized relationships among TQM, marketing and organizational performance are indeed appropriate, the results obtained from the qualitative research in examining these relationships should be congruent with the results obtained from the quantitative research. With a chain of multiple evidence from difference sources collected in the qualitative research, findings and conclusions in this study were expected to become more convincing and accurate than that of solely from the survey research.