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# A proposed framework for implementing TQM in Chinese organizations

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Kwai-Sang Chin

*Department of Manufacturing Engineering and Engineering Management,  
City University of Hong Kong, Hong Kong, and*

Kit-Fai Pun

*Department of Mechanical Engineering,  
The University of the West Indies, St Augustine, Trinidad and Tobago*

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**Abstract** With ever-increasing competition in today's business environment, organizations are seeking every opportunity to improve their business results. Attaining continuous performance improvement and business excellence is the common goal that ties with the concepts of total quality management (TQM). This paper presents a review of the literature concerning the difficulties regarding TQM implementation. It is followed by a description of the UMIST-TQM implementation framework. Further primary research has attempted to identify unique difficulties, which may exist in Chinese organizations with respect to TQM implementation and adoption of the UMIST framework. A case study approach of six Chinese companies was used to validate the framework to establish the current state of TQM implementation and achievements over a 12-month period. The main findings conclude that while TQM can help organizations to achieve improvements, this is often delayed due to the lack of attention to cultural implications and systems. The paper proposes that the UMIST framework can enable Chinese organizations to select an appropriate starting point for their TQM efforts, and develop an improvement process at a pace suitable to their business environment.

## Introduction

Contemporary quality management is often regarded as a systematic way of guaranteeing the organized activities happen the way they are planned. It has evolved rapidly in recent years, involving the design and operation of systems and technology and fostering a commitment to performance improvements (Dale, 1999). Total quality management (TQM) stresses the mutual co-operation of everyone in an organization and associated business processes to produce products and services that meet the needs and expectations of customers. Many progressive organizations are embarking on a journey of transformation towards TQM. Like other foreign invested organizations, many Chinese enterprises in Hong Kong have to demonstrate their ability to manage

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the transformation challenges and achieve the TQM competencies. Some have taken their initiatives to implement quality assurance practices and/or to adopt various quality-related standards in one form or another to verify continued compliance (Pun *et al.*, 1999). However, many others still do not know how to start up with their quality efforts, assess their current status and position themselves in the improvement journey towards TQM. In this regard, the City University of Hong Kong has initiated a project aiming to develop an implementation guideline associated with a TQM implementation framework. The project was supported by Hong Kong government, and its scope was about Hong Kong organizations (through plants in China). This paper introduces common TQM implementation approaches from a comprehensive research process. The main focus is on the customization of the TQM implementation framework developed by the University of Manchester Institute of Science and Technology (UMIST) in Hong Kong. The paper presents the findings of the project and discusses the difficulties associated with TQM implementation and the benefits of adopting the framework in Chinese organizations.

#### **Determinants of TQM implementation**

TQM is an integrated management philosophy and set of practices that emphasizes, among other things, continuous improvement, meeting customers' 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 (Powell, 1995). The implementation of TQM can generate improved products and services, reduced costs, more satisfied customers and employees and improved bottom line financial performance. Although many adherents openly praise TQM, others have identified significant costs and implementation obstacles (Powell, 1995; Roger *et al.*, 1994; Sitkin *et al.*, 1994; Kekale and Kekale, 1995; Doyle, 1992). Critics have suggested, for instance, that TQM entails excessive retraining costs, consumes inordinate amounts of management time, increases paperwork and formality, demands unrealistic employee commitment levels, emphasizes process over results, and fails to address the needs of small firms, service firms or non-profits. The failures of TQM have been attributed to the preexistence of factors that conflict with TQM philosophy and practice. These include lack of cooperation and excessive time and financial commitments. Shortcomings of TQM or the reasons for its failure can be attributed to implementation problems (Roger *et al.*, 1994) or a disregard for contextual factors (Sitkin *et al.*, 1994). Reasons for friction or failure to implement a quality program may include a mismatch of organizational culture (Kekale and Kekale, 1995), a lack of management leadership and inadequate training (Doyle, 1992).

#### **Approaches of TQM implementation**

The overwhelming volume of literature in TQM is primarily focused on techniques, prescriptions and procedures. However, less attention has been

devoted to how TQM was introduced and implemented, the hurdles encountered by organizations, and how the principles of TQM have been adapted to existing cultures (Lindsay and Petrick, 1997). Lewis and Smith (1994) suggested six common approaches that would be used to develop and/or implement TQM. They are:

- (1) *Guru approach*. The writings of Deming's 14-point model, Crosby's 14 steps and Juran's trilogy are used for analysis and implementation.
- (2) *Japanese model approach*. This uses the writings of Japanese writers such as Ishikawa and the educational guidelines (e.g. *Kaizen*, 5S, etc.) of the Union of Japanese Scientists and Engineers.
- (3) *Total quality element approach*. This uses elements (e.g. quality circles, statistical process control and quality function deployment) of continuous improvement rather than full implementation.
- (4) *Hoshin planning approach*. This focuses on successful planning, deployment and execution and diagnosis of quality practices and performance measurement.
- (5) *Quality awards/business excellence criteria approach*. This includes such criteria as the Malcolm Baldrige National Award in the USA, the European Quality Award in Europe, Australia Quality Award in Australia, and similar quality awards in Hong Kong, to identify areas for improvement.
- (6) *Industrial company/leader model approach*. This is where leaders from one organization visit an organization using TQM, identify its system and integrate this information with their own ideas to create a customized approach. Visiting and learning from the quality/excellence award winners is an example of this approach.

While all these approaches work, the most useful TQM implementation plan is an integrated blend of them (Lindsay and Petrick, 1997). The plan should meet a number of criteria to incorporate the organizational development and changes and be operational at the same time. If TQM is typical of other major change processes, it should be implemented using the principles that apply to any organizational change. In particular, each situation should be diagnosed periodically and organization change efforts redirected throughout the ongoing TQM implementation. There is a universal set of quality practices that, if implemented, will lead to high performance (Dale, 1999).

### **Culture issues in TQM implementation**

Culture is something collective in a corporation and therefore not a characteristic of individuals within it. It is invisible and intangible software in a company, and distinguishes one organization from another. Sinclair and Collins (1994) regard culture as a tool in determining organizational performance. It provides companies with some measure of control over their business

processes. It inculcates employees with a sense of the importance of distinct organizational ideologies to be inspired, and helps them face the desired outcome by providing ways of expressing and affirming their beliefs, values and norms. For instance, the conduct of Chinese management is in harmony with Confucian ethics and traditional Chinese values. Watt (1999) argues that Chinese cultural tenets can be traced to Confucianism that is widely presumed to have provided the foundation for Chinese cultural tradition. Confucianism stresses the importance of an individual's place in the social hierarchy of social relationships. Society is seen as a hierarchical pyramid of roles and there are well-established norms governing how people should act and behave in relation to people in other roles (Su *et al.*, 1998). Recent studies found that the underlying logic that has sustained Chinese social and industrial organization of many centuries is based on a paternalistic approach to management, acceptance of hierarchy and the importance of relationships (Pun *et al.*, 2000). Chinese culture extracts the essential features of a given philosophy but is flexible in their applications, while Westerners try to develop a theoretical and methodological model before implementing it. Besides, Chinese managers tend to adapt to a specific environment while Westerners want to control all aspects of the work environment (Martinsons, 1996).

The appropriateness of corporate culture would determine the effectiveness of TQM implementation. For instance, those organizations possessing flexibility-oriented values would emphasize decentralization and differentiation, whereas those possessing control-oriented values would advocate centralization and integration (Rodrigues, 1994). The former is likely to encounter much less difficulty in implementing TQM practices than the latter. Individuals dominated by a large power distance and/or a strong uncertainty avoidance cultural dimension do not necessarily want the responsibilities that come with TQM programs. Similarly, people dominated by an individualistic cultural dimension may not fit well into the group-orientation aspects of management practices (Rodrigues, 1994). The alternation of beliefs, assumptions and values that define the behavioral norms and expectations that determine corporate culture, is both a difficult and long-term undertaking. It is necessary for the management to cultivate concern for employee participation and continuous improvement, and encourage organizational changes that are conducive to it.

### **Overview of the UMIST-TQM framework**

The UMIST-TQM framework was a typical Guru approach developed and applied by UMIST since the 1980s. It has been widely adopted in numerous organizations in the UK, the USA, the Continental Europe, South Africa and Singapore (Dale and Boaden, 1993). As compared with other common approaches of TQM implementation, the framework provides a means of developing and presenting plans in a non-prescriptive manner. It allows organizations to develop the improvement process at a pace that suits their business situation and available resources. Besides, its implementation integrated a blend of some principles and features of other common TQM

approaches that incorporate the organizational development and changes. For instance, the framework stresses the management leadership, people involvement, and continuous improvement as advocated in both the Japanese model and business excellence criteria approach. It also brings in various Hoshin planning and total quality elements (e.g. quality circles, statistical process control, quality function deployment, execution and diagnosis of quality practices and performance measurement) to promote quality practices in organizations. Besides, the framework encourages the sharing of the quality experiences and the benchmarking of good operations practices in industry. This helps individual organizations identify areas for improvements and integrate information and ideas to attain quality performance.

The framework has four main sections and 28 elements (see Figure 1 and Table I). The foundation section is "Organising", and the two pillars, which form its structure, are the use of "Systems and techniques" and "Measurement and feedback". "Culture change" is the fourth section that primarily results from the other activities, interacts with them throughout the improvement

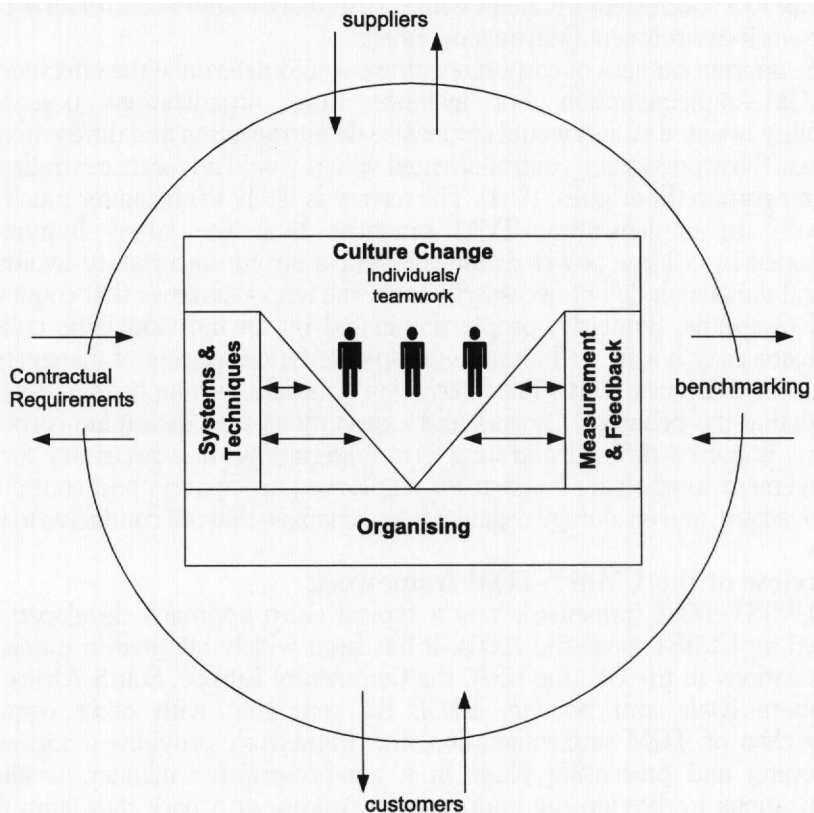


Figure 1.  
The UMIST-TQM  
implementation  
framework

Source: Dale and Boaden (1993)



1. Organizing	2. Systems and techniques	3. Measurement and feedback	4. Culture change
1(a) Formulation of a clear long-term strategy for the process of continuous improvement, integrated with other key business strategies, departmental policies, and objectives	2(a) Identification of the tools and techniques applicable at different stages of the process of continuous improvement	3(a) Identification and definition of key internal and external performance measures to assess the progress being made and to ensure customer satisfaction	4(a) Assessment of the current status of organizational culture, before developing and implementing for change
1(b) Definition and communication of a common organizational definition of quality, TQM and quality	2(b) Development of the appropriate type of training in the use of tools and techniques, targeted at the right people	3(b) Discussion with customers, about expected performance, needs, and expectation, using a variety of techniques	4(b) Recognition of the ongoing nature of culture change, rather than a prerequisite for TQM
1(c) Selection of an approach to TQM	2(c) Consideration of the use of a formal quality system, if one is not in place	3(c) Consideration of benchmarking, once the organization has taken some steps down the continuous improvement journey	4(c) The development of plans for change that enable it to take place in a consistent and incremental manner
1(d) Identification of the organizations and people (internal and external) who can be sources of advice on aspects of TQM	2(d) Identification and implementation of other systems and standards that may be required by customers, legislation, or in order to compete	3(d) Consideration of various means for celebration and communication of success, and the development of methods for recognizing the efforts of teams and individuals	4(d) The recognition of the role of people within the organization
1(e) Identification of stages of improvement activity, taking into account the starting point of the organization, the motivation for continuous improvement and the tools that may be applicable	2(e) Adoption of process analysis and improvement as a continual part of the organization's quality improvement process	3(e) Consideration of linking improvement activities and results	4(e) Identification of the interrelationships of all activities, and the way in which they contribute to quality within the organization in order to minimize conflict

(Continued)

**Table I.**  
The 28 elements of UMIST-TQM implementation framework



Table I.

1. Organizing	2. Systems and techniques	3. Measurement and feedback	4. Culture change
1(f) Recognition of executive leadership, tangible commitment, and support as being crucial at all stages		3(f) Utilization of some means of assessing the progress toward world-class performance	4(f) Identification of factors that indicate TQM has started to change culture
1(g) Development and communication of vision and mission statements that are concise and understandable to all employees			4(g) Consideration of the culture and people of a society in planning for change
1(h) Establishment of a formal program of education and training			
1(i) Establishment of an organizational infrastructure that will ultimately facilitate local ownership of continuous improvement			
1(j) Establishment of teamwork that is designed to become part of the organization's method of working			

**Source:** Abstracted from Chin *et al.* (2000, pp. 32-3)

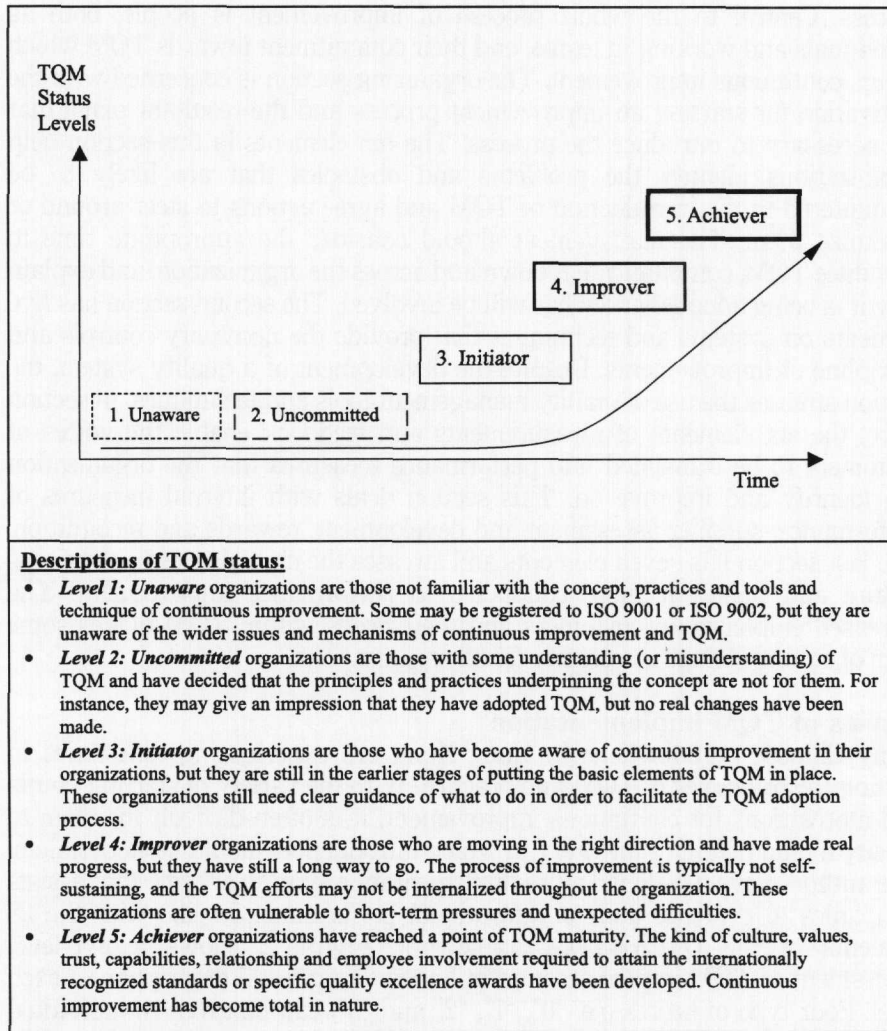
process. Central to the whole process of improvement is people, both as individuals and working in teams, and their commitment towards TQM which brings continuous improvement. The organizing section is concerned with the motivation for starting an improvement process and the resultant plans that are necessary to introduce the process. The ten elements in this section help organizations identify the problems and obstacles that are likely to be encountered in the introduction of TQM and agree actions to steer around or minimize them. The management should consider the appropriate time to introduce TQM, communicate it down and across the organization, and explain why it is being adopted and what will be involved. The second section has five elements on systems and techniques that provide the necessary controls and discipline of improvements. Despite the development of a quality system, the section stresses the use of quality management tools and techniques. In section three, the six elements of measurements and feedback enable the voices of customers to be translated into performance measures that the organization can identify and improve on. This section deals with internal measures of performance, supplier assessment and development, rewards and recognition. The last section has seven elements and stresses the changing of the business culture and makes it more conducive to performance improvement. The increased emphasis on customers and their needs within TQM makes some form of culture change a necessity for all organizations.

### Phases of TQM implementation

Many Chinese organizations in Hong Kong are experiencing difficulties in putting the principles of TQM into practice. With the variety of starting points and motivations for continuous improvement, it is often difficult for them to specify a plan detailing the order in which introduction should be undertaken. The authors have developed a pre-implementation scoring scheme that assists companies to evaluate their organizational performance in line with the 28 elements of the UMIST-TQM framework. Figure 2 shows a five-level assessment of TQM implementation in line with a general description of each level. Four type of scores (i.e. "0", "1", "2" and "3") can be given to individual framework elements when assessing the current implementation status of an organization. A final score can be obtained by summing up the self-assessment scores of 28 elements, and in a way that provides an indication to which stage of TQM implementation the organization attained (see Table II). Individual organizations can choose their appropriate starting point to implement TQM.

After the pre-assessment of performance status, the TQM practices typically enter the awareness, then preparation and implementation phases. The authors have developed a logic flow of a 22-step guideline of TQM adoption developed with respect to these three phases (see Figure 3). A brief description of the guideline is given in the Appendix. The awareness phase begins when one or more individuals have become aware of TQM and started to spread the concept within the organization. In the preparation phase, senior management should review the company's current practice, provide necessary leadership,



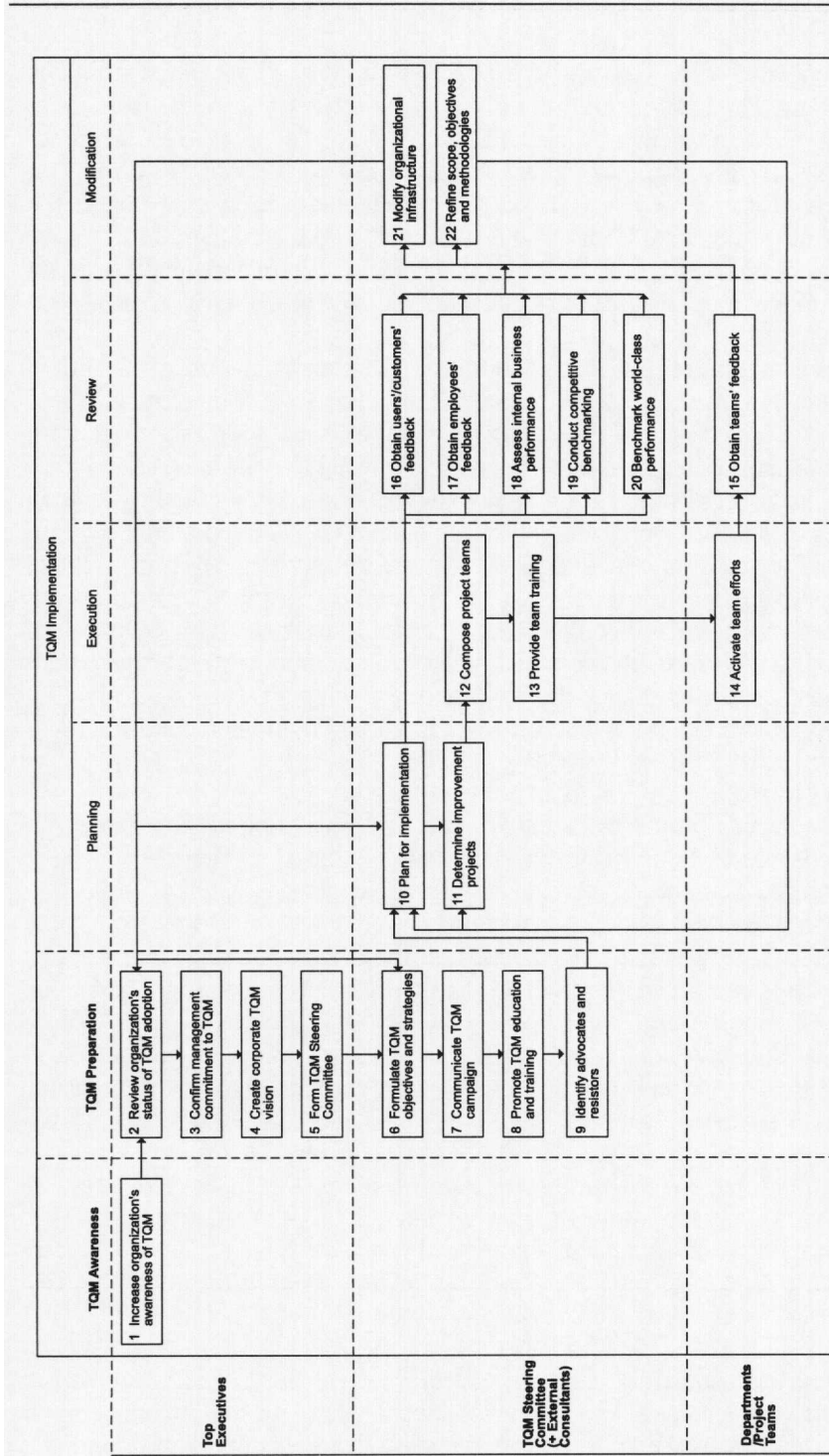


**Figure 2.**  
A five-level assessment  
of TQM implementation

Source: Abstracted from Chin *et al.* (2000), pp.37-8

Score	TQM adoption level
≥ 70	Achiever
≥ 40 but < 70	Improver
≥ 20 but < 40	Initiator
< 20	Unaware/uncommitted

**Table II.**  
A self-assessment  
scoring scheme of  
TQM implementation



Source: Abstracted from Chin *et al.* (2000), pp.46-7

Figure 3. A 22-step implementation guideline of TQM adoption

commitment and resources, and create a new quality vision for continuous improvement. Though redefinition of quality objectives and scope from item-focus (i.e. conformance to specification) to people-focus (i.e. customer satisfaction), organizations would encourage people participation and support; and identify those who resist the TQM implementation. In this phase, the organization would acquire knowledge, and tools and techniques, and prepare itself for a transition into the TQM implementation phase. Adequate training plans and deployment of necessary skills and knowledge for employees should be established.

The implementation phase has four stages, namely planning, execution, review and modification. The organization begins with identification of improvement projects and technical aspects of implementation in the planning stage. In the execution stage, senior management needs to deploy ownership of improvement processes down to line management, and allow them to develop operation goals and objectives in a disciplined and coordinated manner. Team spirit and efforts should be activated with training support. In the review stage, the measurement and feedback systems need to be in place to help assess internal performances and conduct benchmarking exercises with competitors and world-class performers. This then comes to the modification stage where management needs to reinforce the positive culture changes and re-invest in the existing organizational infrastructure to facilitate TQM implementation.

#### **A research project on TQM implementation**

In 1998, the Industry and Technology Council in Hong Kong funded a research project to develop a localized framework that was based on the UMIST-TQM implementation framework for Hong Kong organizations (Chin *et al.*, 2000). The project scope focused on the industry sectors of electronics/electrical appliances and toys/plastic products, as they were among the leading manufacturing sectors in terms of gross domestic products and number of employees in Hong Kong. The project, led by a project team from the UMIST and the City University of Hong Kong, has four stages. Stage 1 investigated the characteristics of current quality management practices in manufacturing industries. A series of awareness seminars were held, and personal interviews and surveys were conducted. In Stage 2, the project team attempted to customize the UMIST-TQM framework and developed a set of guidelines for use in Hong Kong environment. In the Stage 3, a pilot program of TQM implementation was launched in several organizations of the selected manufacturing sectors. The roles of the project team were to assist the participating companies in reviewing their current status of TQM accomplishment, assessing which features of the framework were already in place, and prioritizing those features that are not yet in place. The team also suggested to these companies the feasible action plans for the introduction of the prioritized features, monitored the progress of their action plans, identified the problems and implemented their own plans. The final stage consolidated

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the findings of the project, and together they validated the effectiveness of the framework and guideline for use in Hong Kong.

### **Summary of project findings**

Over 100 companies have attended the introductory seminars and participated the surveys in Stage 1 of the project. Some 30 companies were invited to have a subsequent personal interview in the Stage 2. The survey findings showed that most organizations considered the quality issue and quality management as the means by which they could survive in increasingly aggressive markets and maintain a competitive edge over their rivals. About 40 per cent of surveyed organizations have attained the ISO 9000 certification, and many others were working towards the ISO 9000 registrations. However, the interviews found that many organizations have still lacked knowledge of TQM implementation, and did not know how to evaluate their quality accomplishment and performance improvement status. In particular, they have difficulties in determining their performance indicators, and hence executing corrective actions and revising quality targets. Moreover, the interviews also found that many companies have some sort of difficulties in finding practical approaches of TQM implementation that could best fit for their requirements on internal quality audits and external benchmarking. This ascertained the need of acquiring a customized TQM approach that might help Hong Kong organizations implement their total quality efforts and improve quality performance.

Moving into Stage 3 of the project, 12 organizations from the industry sectors were selected using a quota sampling method from the targeted industry sectors of electronics/electrical appliances and toys/plastic products. The project team has invited senior management, executives and/or representatives of these organizations to attend in-depth interviews. Three organizations have withdrawn their participation because of clashes in their production peak during the pilot period; and another three could not commit their active participation and eventually were excluded from the pilot. Therefore, six companies have proceeded in the program (see Table III). After the completion of initial assessment of their current TQM adoption status, the project team has visited individual participant companies and shared with them the experiences and techniques in quality improvements. The main tasks were to investigate the production processes and operation practices, and to evaluate the progress made in the adoption of TQM. The team also provided assistance in guiding these companies to formulate time-scaled TQM implementation plans with respect to their organizational resources and constraints. Over a 12-month investigation, the project team consolidated the findings from the pilot program focusing on the TQM accomplishments of individual participant companies (see Table IV). Individual finding reports were communicated to all six participant companies and mutual agreements were obtained from them.



**Table III.**  
Profiles of  
organizations  
participating in the  
pilot program

Company	Products	Organizational strengths	
A	Plastic products	Strong customer base Clear production flow lines Good factory environment	Recognition of importance of TQM
B	Toys	Strong customer base Clear production flow/lines Good factory environment	Recognition of importance of TQM
C	Electrical household appliances	Strong product brand Clear improvement objectives Willingness to adopt TQM	Good defect reporting mechanism
D	Toys	Clear production flow Good customer relationships MIS for defects	Rigorous product testing Sound quality control system
E	Power tools and floor care appliances	Investment in technology Visible management system People satisfaction	Good 5S housekeeping Use of statistical process control
F	Batteries	Good 5S housekeeping Engineering operations TQM fundamentals are in place	Adoption of SMED Advanced quality planning

**Table IV.**  
TQM accomplishments  
among pilot  
organizations

Group	Company	From	Changes of TQM adoption status <sup>a</sup> To
1	A and B	"Unaware" (Level 1)	"Uncommitted" (Level 2)
2	C and D	"Unaware" (Level 1)	"Initiator" (Level 3)
3	E	"Initiator" (Level 3)	"Improver" (Level 4)
4	F	"Early improver" (Level 4)	"Experienced improver" (Level 4)

**Note:** <sup>a</sup> See Figure 2 for the descriptions of TQM status

With respect to the performance as indicated in the levels of TQM accomplishments, four groups of organizations could be identified in the last stage. They are described in the following sub-sections.

*From "unaware" to "uncommitted": group 1 organizations*

Company A was one of two pilot organizations that fall into this group. It was a medium-sized plastic product manufacturer in Hong Kong and has production plants in mainland China. The company has attained ISO 9002 certification, but at the time of joining the program had no experience about TQM implementation. Senior management has realized the potential benefits TQM might bring to the company and this is the motive to join the pilot program of the project. An operation manager had taken the responsibility to self-assess the current TQM status and to draft an implementation plan for the company.

For the reason that senior management could not readily commit to implement the planned changes after joining the program, little progress has been made over the year. It was found that an underestimation of the implementation difficulties, overestimation of organizational capabilities and a lack of senior management leadership and empowered culture were among the main obstacles facing in the company. Besides, the company failed to recognize the importance of people training, involvement and participation. Particularly in its China operation, line workers and supervisors were unwilling to and/or would not think about what they should do and how they could contribute to improvement. Throughout the pilot period, the company has no responding strategies and tactics to tackle these obstacles.

Company B was a large toy manufacturer and has many plants in mainland China and has attained ISO 9002 certification some years ago. The company joined the pilot program and intended to start the TQM implementation in one of its production plants in China. The corporate director has delegated the responsibilities to the general manager to take charge of the program. An external consultant was hired, but the design of the implementation plan and its execution seemed to rely entirely on the general manager. The implementation could not obtain continuous support from senior management. There was also an absence of an empowering culture to implement any improvement activities and, as a result, the program could not have sufficient involvement from various levels of employees. The plant has suffered from weak organizational learning and sharing experiences of any improvement efforts. Lack of incentives, motivations and recognition has also hindered the progress of TQM implementation. Besides, the company has faced similar difficulties as that of Company A. The project team has uncovered the problems to the company. However, it has shown no committed effort to revitalize them at the time of this pilot program.

*From "unaware" to "initiator": group 2 organizations*

Company C was a subsidiary of its parent group in the UK. It manufactures and sells small electrical appliances in various markets over the world. The company has many distributors worldwide and production plants in continental Europe and mainland China. The company had experienced certain difficulties in meeting the output targets, changing the employees' working attitudes, and resolving conflicts among the manufacturing, operations and quality departments. The company was looking for clear guidance and appropriate approach to tackle these difficulties. After joining the pilot program, the financial controller of the company took charge of the self-assessment of TQM status and formulation of TQM implementation plan. The company has introduced company-wide employee education and training, and revised its reward schemes. With support from senior management along with the involvement from middle management and operators, several cross-functional teams were formed to manage improvement projects. A lot of promising progress has been made, and some tangible benefits in terms of

improved productivity and reduced operation costs were achieved. The achievements have fostered the continual improvement and better allocation of resources in the organization and, more importantly, the cultivation of the empowered culture throughout the organization. The company has also planned to obtain its ISO 9002 registration in 2001.

Company D was one of the world-leading toy manufacturers and produced a wide range of toys for original equipment manufacture (OEM) customers. The company has manufacturing operations based in mainland China and Hong Kong. Its major production lines have attained ISO 9002 certification. Senior management has committed to implement TQM and developed a TQM implementation plan with measurable objectives. The plan stressed the importance of training and motivation of employees, development and application of techniques, such as the internal customer-supplier concept, employee satisfaction survey, and the building of long-term partnership with customers and suppliers. The execution of the improvement plan has obtained people's participation and support from every level. In line with the provisions of organizational-wide employee training, the company has developed shop-floor performance measures and used new incentive schemes. In addition, it has also encouraged internal competitions that in turn brought a positive effect on productivity improvement. The achievements during the pilot period have fostered the company's further initiatives for attaining continuous improvement.

*From "initiator" to "improver": group 3 organization*

Company E was a manufacturer of power tools and floor-care products for OEM customers. It has attained ISO 9001 certification, and has some 200 employees in its Hong Kong office and about 5,000 employees in its China plants. It and senior management has committed to achieve TQM. For joining the pilot program, a steering committee was formed. The plant manager and the quality manager were responsible for the self-assessment of the TQM status and formulation of an implementation plan. Besides, the company also hired an external consultant to assist with the implementation and monitor the progress of the plan. With clear quality objectives (i.e. to attain zero defects in process and products and total customer satisfaction), senior and middle management have been actively involved and shop-floor personnel were encouraged in executing the plan. During the pilot period, people's attitudes have been changed positively towards continual improvement, and their morale and efficiency have been improved on shared tasks and team activities. The TQM implementation has also brought substantial achievements in cutting operational costs. In addition, the company has conducted formal customer satisfaction surveys and employee satisfaction surveys to obtain feedback from customers and employees. These also helped the company identify several major blockages of TQM implementation and develop tactics and actions to remove them. The results of the pilot program suggested that the company has reached the "improver" level of TQM accomplishment.

*From "early improver" to "experienced improver": group 4 organization*

Company F was a multinational manufacturing company producing a wide range of batteries, electrical installation products and automotive electronics and cables. The company has some 1,000 staff in its Hong Kong offices and about 4,500 staff in its China plants. It has attained ISO 9001 certification and employed various quality tools in production. The company has adopted TQM aiming for becoming a world-class manufacturer. Through their participation in the pilot program, senior management re-assessed the TQM status and produced an implementation plan. The company has launched a company-wide staff training and education program, and also conducted customer surveys through a third party to obtain feedback from customers on the quality and services of its products. In addition, the company has developed strong partnership with suppliers, and obtained their feedback through regular exchanges, meetings and visits. The benefits of TQM implementation have been overwhelmingly positive in the company, especially in encouraging culture change and achieving performance. Successful reported cases of quality and productivity improvements were becoming numerous and impressive. Evidence showed that the company was making steady progress towards the "achiever" level of TQM accomplishment.

**Discussion**

The project findings ascertained that many organizations have recognized the importance of the TQM implementation on the one hand, and have difficulties in putting the principles of TQM into practice on the other. Common TQM obstacles and implementation problems encompass inappropriate organizational culture, a lack of management leadership, inadequate training, failure to recognize the importance of employee involvement and participation, a lack of cooperation, the time which needs to be devoted to TQM, and the financial commitments needed to support training and education. To tackle them, visionary strategy and restructuring must be accompanied by organizational commitment to a cultural shift. Moving an organization from resistance, through inertia and passive acceptance of change to active involvement and finally commitment, requires highly visible leadership as a model of desired behavior and attitudes, continuing support and reinforcement, building new work relations and cross-training. The UMIST-TQM framework is a conceptual or descriptive model that provides a feasible means to achieve them. The adoption of the framework is naturally a strategy of TQM implementation from the company perspective. The pre-implementation scoring scheme and the 22-step guideline of TQM adoption developed with respect to the framework have also been applied as a method for assessing the current state TQM adoption and achievements among Chinese organizations in Hong Kong.

Over a 12-month period of pilot program, a majority of participant companies had already improved their quality performance though it might need more time to observe the benefits in terms of improvement of business



results like quality improvement, market share and profit increases. It was found that Companies A and B were still in a stagnant progress of TQM implementation because of several obstacles, but Companies C, D, E and F have used the framework to enhance their performance and to attain continual improvement. This pilot study suggested that successful TQM implementation in Chinese organizations would rely significantly on:

- a committed management and leadership;
- a shared vision and clear sense of direction;
- an empowered and trained workforce; and
- the management of cultural dynamics.

There are increasing needs to manage TQM implementation successfully in Chinese organizations. The project findings suggested that the framework and the developed implementation guideline would help individual organizations to choose an appropriate starting point and course of actions, and design the improvement process at a pace that suited their business situation and available resources. A list of potential benefits derived from the adoption of the framework is given below:

- The framework provides a mechanism for debating continuous improvement strategies, plans, actions and initiatives and helps to generate a common level of TQM understanding and reconcile views and opinions.
- The framework assists management to identify the factors that can slow down the process of improvement (e.g. inconsistent objectives, insufficient involvement and ownership, lack of data, lack of line worker involvement, failure to complete projects and break-up of improvement teams).
- The framework helps to pinpoint weaknesses in the current approach of the organization to the management of quality.
- The framework provides the means for the management committee and/ or the TQM steering committee to assess the progress made by business against the plans developed and ensures that issues are followed through. Problems in undertaking tasks can be identified and appropriate countermeasures developed.
- The framework requires all members of senior and middle management to be involved in the planning process, thereby developing ownership of the resultant plans. The prioritizing of the framework features, in conjunction with business and commercial needs against a time scale, helps to ensure that TQM is part of the business planning process and integrated with other strategies.
- The framework provides a means of communicating in organization-specific terms, what is involved in a process of continuous improvement

and provides the essential logic of why the organization is adopting and progressing TQM and what is involved. It ensures that discussions on continuous improvement are both structured and specific.

- The framework provides a common approach and language for the businesses of a multi-site operation. In this way, it avoids confusion with common suppliers and customers and presents a consistent approach and TQM image to both employees and the marketplace.
- The framework can be used not only to assess the maturity of TQM, but also to audit whether or not certain features of the framework are firmly in place. In this way, the next set of priorities can be identified.

Being a reference point for quality performance improvement, the framework and the guideline can help organizations build on the quality initiatives already in place and guide their development of TQM in a formal manner. Based on this conceptual implementation model, Chinese organizations can employ the scoring scheme and the guideline of adoption to develop relevant management strategies and tactics, and simulate solutions based on the status of their resources, constraints, strengths and weaknesses.

### Conclusion

Manufacturing businesses have been and will continue to be a mainstay of the economy in Hong Kong, mainland China and other regions in the Asia Pacific region. Many researchers and practitioners stressed the need for the development of high value-added products, the introduction of advanced technologies and new production methods. Equally important is the implementation of an efficient and effective approach to quality management. Moreover, organizations also need to have management and people commitments and build a quality culture that commits to organizational performance improvement. The TQM efforts can facilitate an adequate application of new technologies, equipment and production methods, allocation of resources, improvement of production and management efficiency, attainment of environmental, health and safety requirement, and public and social accountability. However, over-emphasis in the technical aspects without people commitment and cultivation of the culture will often delay the real implementation of TQM.

Like other business enterprises, Chinese organizations need to establish an empowering culture and system where all employees throughout the organization have the opportunity to learn, enabling them to continually improve their performance. This paper discusses the adoption of the UMIST-TQM implementation framework as a strategy and use of the implementation guideline as a feasible means for attaining TQM-oriented improvement efforts in Chinese organizations. The implementation guideline can help organizations choose an appropriate starting point and course of actions, and develop the improvement process at a pace that suited their business situation and available resources. Nevertheless, Chinese organizations need to foster a

committed and empowered culture that suits their own paths towards continuous improvements.

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### Appendix. A 22-step implementation guideline

#### Step 1. Increase organization's awareness of TQM

Before considering the adoption of TQM, management should determine the strategic quality needs of the organization. Senior management needs to evaluate the current operation practices, assess the strengths and weaknesses, determine the opportunities for improvements, and explore the threats being faced by the organization.

*Step 2. Review organization's status of TQM adoption*

A review should be conducted of the current status of the beliefs, concepts, and system of quality management practices in the company. Senior management needs to investigate the success elements and critical processes of TQM adoption that cover the design, planning, operations, delivery, maintenance, control and monitoring functions, as well as the performance audits of the processes, products and services currently provided by the organization.

*Step 3. Confirm management commitment to TQM*

Senior management needs to commit time and organizational resources for adopting TQM. They should take the initiative to identify areas for improvement throughout the organization, obtain agreements from all parties involved regarding the scope and objectives of improvement efforts, and develop an employee-led process for improvement.

*Step 4. Create corporate TQM vision*

Senior management needs to set forth a clear TQM vision and mission statement(s) that indicates company objectives for performance improvement. The vision should be translated into quality goals and strategies, and communicated to employees, customers, suppliers and other stakeholders by the use of company newsletters, periodicals, and other media. This would allow them to visualise the mission, culture and commitments of the company.

*Step 5. Form TQM steering committee*

A management committee, panel or steering committee needs to be established to design, plan, and manage the introduction and development of TQM. The committee should comprise top management, operations executives and front-line representatives. The main role is to assess and monitor the entire process of TQM adoption. For example, the committee should establish a set of priorities for project selection, provide guidance to project teams, set up examples of personal commitment, and identify any blockages.

*Step 6. Formulate TQM objectives and strategies*

The steering committee would help senior management establish the corporate TQM vision and translate it into a set of TQM objectives, operating principles and action plans. It would activate a company-wide strategic quality planning, formulate strategies and prepare quality plans with the divisions and appropriate personnel, and provide new motivation to make the improvements.

*Step 7. Communicate TQM campaign*

It is necessary for senior management to communicate with employees their roles and needs in the TQM campaign. The steering committee should publicise the TQM vision, guiding principles and objectives in an open and effective way. It also needs to make the performance criteria more specific to fit the company's situation and give them meaning within the context of the business operations. Typical communication channels include monthly/annual business meetings, informal gatherings, departmental meetings, and company newsletters.

*Step 8. Promote TQM education and training*

It is important for both management and staff to know which constituent parts require development of documentation and conformity to quality, environmental, and occupational health and safety management standards. The design and provision of a company-wide education and training programme need to promote awareness and introduction of TQM practices. The programme should convey the quality management concepts and team practices (e.g. bottom-up quality culture, leadership, team building, and quality control circles).

*Step 9. Identify advocates and resistors*

In order to promote TQM practices and minimize or avoid unnecessary resistance from employees, it is beneficial to investigate the attitude of employees using employee satisfaction



surveys and performance appraisals. This would help identify and distinguish the advocates and resisters of TQM adoption, and seek possible means to establish a favorable and harmonious organizational working environment. Decisions need to be made about the resisters.

*Step 10. Plan for implementation*

An implementation plan for continuous improvement activities needs to be developed in line with the four sections of TQM framework, namely organizing, systems and techniques, measurement and feedback, and changing the culture. Typically, the process would go through a series of stages encompassing awareness, education and training, consolidation, problem identification, improvement planning, implementation of quality plans, and assessment. It is necessary to identify the milestones and have ongoing monitoring of the plan. Co-ordination and co-operation among various functional areas (e.g. design, operations, marketing, and maintenance) should be encouraged. An agreed pay/rewards and recognition scheme for promoting TQM adoption should be established.

*Step 11. Determine improvement projects*

This is to ensure that the quality improvement projects are supportive of the TQM vision and objectives. Improvement and problematic areas are segregated to determine whether "Kaizen-type" improvements or breakthrough actions and or both are required. It is advisable to assign initial projects that have a high probability of success. Detailed action plans should be developed with consensus and support from all functional areas concerned. Appropriate operation procedures should be prepared and work instructions revised in line with users' and customers' feedback and requirements.

*Step 12. Compose project teams*

For facilitating the project work, it is necessary to establish a strong team infrastructure (e.g. departmental improvement teams, process improvement teams, cross-functional teams, as well as *ad hoc* task forces), appoint team leaders and select members who are committed to teamwork and develop clear operating guidelines for the teams. These teams and task forces are formed according to their skills and different operational requirements. They need to be action-centred, establish ground rules, share information, and cultivate team unity.

*Step 13. Provide team training*

Adopting TQM should include training in applying practical skills, methods, tools and techniques (e.g. problem solving techniques, quality control tools, and 5S concepts) in job-related areas. The quality policies and the conformity requirements of quality management and related standards (e.g. ISO 9000 series, SA 8000, QS 9000, TL 9000, ISO 14000 and OHSAS 18001, etc.) would be included in the training programmes. Common approaches to training include cascaded training, training by designated in-house trainers, and training by external consultants and/or quality professionals.

*Step 14. Activate team efforts*

Teams and task forces should be activated with formal team meetings. They should be encouraged to initiate projects and plans regarding the improvements of processes, operations and procedures in their work places. Senior management needs to delegate suitable authority and deploy resources to teams and task forces, in conjunction with the execution of improvement tasks and activities. The steering committee should provide a clear project scope and objectives, review the progress of individual teams, and advise as appropriate, management for improved deployment of resources. In addition, trained facilitators should be assigned to help direct the administration and improvement efforts of individual teams and task forces. Motivation and morale support should be initiated from the top, and then deployed to the different departments and/or divisions of the organization.

*Step 15. Obtain teams' feedback*

The steering committee should acquire the teams' feedback of project progress and final outcomes through standard feedback channels (e.g. regular progress reports, performance assessment and audit sheets). The progress of improvement plans and the corrective actions undertaken should be reviewed. Activities that address team effectiveness would stimulate team efforts and encourage feedback in performance improvement. The efforts of teams should be explicitly rewarded, and management should show appreciation of team efforts in achieving predetermined targets of improvement performance. This would stimulate teams and individuals to perform even better, and also encourage others to participate actively in continuous improvement activities.

*Step 16. Obtain users'/customers' feedback*

This is to collect users' and customers' (internal and external) feedback through customer-satisfaction surveys, customer visits, customer complaints, marketing research, user groups or customer panels, and customer-supplier meetings. The feedback and requirements acquired from users/customers would help prioritize the identified areas of continuous improvement, along with the time and resource constraints, as well as other organizational concerns (e.g. environmental, safety and social responsibilities).

*Step 17. Obtain employees' feedback*

Employees' views should be sought on their attitude and comments towards TQM implementation by all possible means, including employee satisfaction surveys, employee performance appraisal and departmental meetings. Positive recognition and feedback of quality efforts are both important for organizational learning and as a stimulus to create structured, planned and continual improvement activities in the organization.

*Step 18. Assess internal business performance*

Internal business assessment is an effective means to audit the performance of internal operations by comparison with internal standards and organizational goals. The core requirements of design quality, prevention, conformance and documentation should be stressed. All positive changes and improvements should be evaluated in line with the corporate mission and operational objectives. Deviations from the predetermined objectives should be explained. In addition, useful data and information should be processed and shared to promote company-wide organizational learning.

*Step 19. Conduct competitive benchmarking*

Competitive benchmarking of operations and processes with the "best-in-class" performers and competitors in industry should be performed. In order to diagnose the improvement opportunities and analyze problematic areas, performance information of organization operation/process should be acquired, and relevant standards, specifications and methods employed. The findings can contribute to refinement of the quality goals, safeguard the performance improvement, and enhance customer values.

*Step 20. Benchmark world-class performance*

Once some of the basic steps in the continuous improvement process have been put into place, the proven means of assessing the progress of business towards world-class performance should be used. This includes performance benchmarking against other competitors of world-class performance, and performing self-assessment of progress against the excellence model criteria of the Malcolm Baldrige National Quality Award, the European Quality Award, or other national and regional quality awards (e.g. the HKMA Quality Award).

*Step 21. Modify organizational infrastructure*

The adaptation of TQM practices requires comprehensive organizational changes and human integration into every aspect of the business. To support TQM adoption, policy deployment and continual improvement, it is usually necessary to modify the existing organizational infrastructure and change the procedures and process, organizational structure, rewards and recognition systems. Any implementation roadblocks, obstacles and barriers should be identified and eliminated.

*Step 22. Refine project scope, objectives and methodologies*

Several variables and factors affect the progress of quality projects and programmes, including organizational resources, management commitment, state of operations, equipment condition, impact of changes, communication between departments, time spent on training, employee resistance, conflicting interpretations of policies and other decisions, customer satisfaction, safety, operational and financial performance. It is necessary to perform periodical reviews on the scope, objectives and methodologies of these projects/programmes, and refine them accordingly to take account of the changing organizational needs and requirements. In addition, the creation and transfer of good practices should be facilitated, and continuous improvement procedures properly established, documented and monitored according to the quality manual.