The evolution of strategic quality management

Luís María R. Calingo
Nanyang Technological University, Singapore

Received July 1994
Revised September 1995

In their book *In Search of Excellence: Lessons from America's Best-run Companies*, Thomas J. Peters and Robert H. Waterman, Jr[1] found that the most consistent factor among companies they rated as most successful is an obsession with some form of quality, reliability and/or service. Indeed, quality can be an important part of competitive strategy. Research has shown that companies that furnish quality products can charge more for their products, with resulting higher profit margins[2]. Data show that improvement in product quality has a stronger relationship to increases in market share than does price. More recent experience shows that as quality increases, so does productivity.

Many prominent US companies have demonstrated that quality has an immense strategic value in today's competitive world market. David Garvin[3] cited Hewlett-Packard, Xerox and Corning Glass as organizations that have successfully established quality strategies. Success requires attention to quality-related implications in every strategic decision made by a company. These companies have concurrently achieved higher quality and greater productivity through investments in people, design of products and process improvements. The key to success is an understanding of quality and the ways in which it can be integrated into corporate strategy. The White House Conference on Productivity[4] noted in its final report that:

> Managing the quality dimension of an organization is not generically different from any other aspect of management. It involves the formulation of strategies, setting goals and objectives, developing action plans, implementing plans, and using control systems for monitoring feedback and taking corrective action. If quality is viewed only as a control system, it will never be substantially improved. Quality is not just a control system; quality is a management function.

Garvin[3] reported recent shifts in thinking among top management teams in a growing number of companies. Chief executives are linking quality closely with profitability and are including quality in the strategic planning process. Many CEOs identify quality as an aggressive competitive weapon. This orientation towards quality has been brought about by increasing foreign competition, consumer demands, government pressures and increases in both the number and size of awards in product liability lawsuits. Making strategic quality a part of a company requires shifts in thinking. The definition of profit has to be

This paper was presented at the Fifth Asia Pacific Quality Congress and the Fourth Asia Pacific Quality Control Organization Conference: Quality – Progress, Productivity and Profit, Kuala Lumpur, Malaysia, 8-10 August 1994.

International Journal of Quality & Reliability Management, Vol. 13 No. 9, 1996, pp. 19-37, MCB University Press, 0265-671X

expanded to include how well companies fulfil their customers' needs[5]. In the quality perspective, profit is a result of a continuous conformance to customer requirements.

Paralleling this change is the fact that quality has been redefined as a measure of customer satisfaction over the lifetime of the product. In addition, quality is measured relative to competitors' product offerings, which generates other new perspectives:

(1) Market research on quality becomes important because it provides information as to what customers want and what competitors are doing.

(2) Customers view life-cycle costs as more important than initial prices.

(3) Customer complaints can be employed usefully as a source of information.

(4) Measures of profitability and organizational effectiveness must place a value on customer loyalty.

(5) Continuing steps should be considered to match or exceed competitor quality.

(6) Continuous quality improvement appears to be a better strategy than setting stable quality norms.

The strategic impact of quality is so far-reaching that companies which do not accept quality as the measure against which all corporate efforts are gauged will not be well-positioned in the marketplace of the future[5]. Strategic quality goes beyond competitive advantage through functional excellence. In its fullest form, quality is an entire system of thought. If quality initiatives are going to succeed, they must be implemented organization-wide because all functions are interrelated. A consequence of the need for a company-wide quality initiative is that the formulation of such a strategy must involve all management levels. This new process also changes the nature of the quality professional needed by organizations. Understanding corporate strategic goals becomes more important than possessing technical expertise, and education of all staff in the organization becomes necessary.

Integrating strategy formulation and total quality management

Although a number of strategy writers differ on the proper strategy for obtaining a sustainable competitive advantage, many have overlooked the importance of total quality management (TQM) in developing a relevant strategy. The discipline of competition arising from the free market requires the seven elements commonly associated with TQM: customer-driven quality, strong quality leadership, continuous improvement, full employee participation, management by fact, organization-wide application, quality and operational results, and systematic quality strategies, methods and practices. TQM will also help leverage competitive asymmetries associated with competitive scope, organizational base, and information resources. Because

most companies have apparently indicated a commitment to quality primarily for marketing purposes, the lead time in implementing TQM has been relatively long. Therefore, TQM also possesses pre-emption potential given the typically sluggish response of competitors. Increasingly, TQM is being recognized as the only mechanism to either sustain competitive advantage or survive competitive disadvantage[6].

The bodies of knowledge of strategy formulation and TQM have been dominated by contributions from different disciplines – business policy and industrial engineering/production management, respectively. As a result, the management literature has treated strategy formulation and TQM as distinct, separate organizational processes. This artificial distinction ignores the opportunity to view TQM not only as a management system, but more importantly as an overall philosophy of strategy implementation. This article is based on the proposition that, in excellent organizations, strategy formulation and TQM have converged into an integrated process. In fact, numerous writers recently have proposed models to describe how TQM and strategic management can be linked in practice.

Michael S. Bremer[7], a Chicago-based TQM consultant, outlined a six-step process linking strategic management and continuous process improvement. A more elaborate system, *hoshin kanri* or policy deployment[8], illustrates how the maturity stage of strategy-quality integration looks from an operational standpoint in many contemporary organizations.

The *hoshin* planning system involves a continuous improvement of strategic planning (see Figure 1). *Hoshin* planning was developed by Yokogawa Hewlett-Packard in the 1970s and was subsequently adopted in the USA by Hewlett-Packard, Procter & Gamble, and Florida Power and Light. In its simplest form, it involves a plan, execution and audit, which could be recast into the Deming cycle of "plan, do, check, act".

One may view *hoshin kanri* as the strategic quality management system you will find in world-class, mature quality organizations. In its more detailed form, *hoshin* planning includes a long-range plan (five- to ten-year vision), a one-year plan, deployment to departments, implementation, monthly audits, and the president's annual audit. The following is a brief description of these components:

(1) *Formulate the plan*. This component involves the usual strategic planning activities which includes both strengths-weaknesses-opportunities-threats (SWOT) analysis and strategy development, but also benchmarking and the formulation of a five- to ten-year vision. The organization then translates the long-term vision and strategic plan into a one-year operational plan. There is an ongoing monitoring of the validity of the planning premisses, thereby subjecting the plan to continuous improvement.

(2) *Deploy to departments*. The plan is communicated to all departments involved. Departmental goals and objectives are set in accordance with

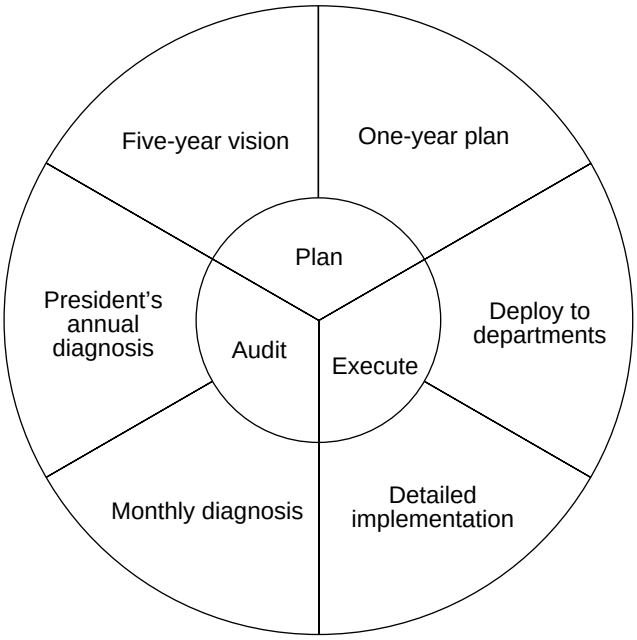

Figure 1.
The *hoshin* planning cycle

the plan and individual strategies are established. Feedback at this stage enables the refinement of the plan prior to its final initiation.

(3) *Implement*. The strategic and operational plans are implemented at the different levels of the organization – corporate, business unit, functional, individual. A well-designed quality function deployment[9] smoothly translates planning goals and customer requirements into operational techniques.

(4) *Audit*. Feedback is given regularly to evaluate the progress and make mid-course corrections. Each individual, as well as each department, conducts a self-assessment. The chief executive officer communicates the results of this self-examination to the workforce and updates the organizational plans accordingly.

In a related conceptual paper, Malcolm Walsh[10] synthesized various conceptual models into a comprehensive approach for the strategic management of quality at the business-unit level. The conceptual base consisted of two management models, three strategic management models, and a recursive, five-level cybernetic system representation for optimizing the way an organization works. The three sets of models were mapped on to one another, thereby correlating the organizational control system, strategic objectives and environmental situation with the management of quality. To this combination were added models of organizational culture, strategy formulation and the business life cycle. The synthesis proposes to manage quality along all strategy

levels, each with its organizational and control relationships. The relative emphases at each level are changed to respond to the product's or service's position in its market life cycle.

A proposed framework for quality-strategy integration

This paper proposes that quality-strategy integration has both a substantive dimension and a process dimension. Substantive quality-strategy integration occurs when top management has translated the fundamentals into at least four strategic planning objectives:

(1) continuous improvement in quality goods and services;

(2) greater responsiveness from development through manufacturing and sale to the final use;

(3) greater flexibility in adjusting to customer needs; and

(4) cost reduction through improved quality and non-value-added waste elimination[11].

On the other hand, process integration occurs when quality planning effectively governs the organization's strategic planning and goal-setting processes.

The tightness or looseness of both substantive and process integration have observable consequences. Substantive integration will be tightest when:

- quality goals, strategies and other TQM elements are completely included in the corporate strategic plan;
- the corporate strategic plan includes quality goals and strategies at least as detailed as the organization's quality plan; and
- no difference is allowed between the quality targets stated in the strategic plan and the quality plan.

Process integration becomes tighter when the quality director performs more of the following roles:

- provides staff support for the preparation of the corporate strategic plan;
- reviews the corporate strategic plan before it is finalized; and
- participates in monitoring planned strategy results against actual results.

This paper focuses on the process dimension of quality-strategy integration. It recognizes that, while both substantive and process integration should be expected to be taking place in world-class organizations, strategy-quality integration does not occur overnight. The current TQM literature provides some hints, though indirect and only suggestive, as to how long this integration takes place. For example, Crosby[12] indicated a five-year time frame for quality improvement by estimating that an organization can reduce its cost of quality from 20 per cent of sales to the ideal 2.5 per cent of sales within a five-year period. The neglect of this temporal dimension is the one overriding problem

with previous attempts to integrate strategy and TQM. Organizations do not come into existence knowing how to plan strategically and practise TQM. The integration of strategy and TQM is the outcome of an organization-wide evolutionary change in itself.

A review of earlier models

Organizations pass through different stages of strategy-quality integration, each one associated with unique quality management practices and strategy process characteristics. The works of Crosby[12], Gluck *et al.*[13], Williams and Bertsch[14], and Quinn and Cameron[15] offer conceptual bases from which the temporal dimension of strategy-quality integration may be studied. Because these works have been reported in diverse literatures, a brief review of the models is presented here. This review forms the basis for a proposed framework that integrates these four models. Table I summarizes the characteristics of each model as specified by its authors; each of the four models is organized in the table under a summary model consisting of five major stages.

Crosby: quality management maturity

Philip Crosby[12], who defined quality simply as "conformance to requirements", is best known for his advocacy of zero-defects management and prevention as opposed to statistically acceptable levels of quality. He is also known for his 14 steps to quality improvement and the quality management maturity grid.

In his maturity grid, he advocated that organizations go through five successive stages of quality maturity as they approach the maximum level of quality in all phases of organizational activity: uncertainty, awakening, enlightenment, wisdom and certainty. In the first stage, the cost of quality is about 20 per cent of sales and management has no comprehension of quality as a management tool. The intermediate stages are characterized by a transformation in management understanding and attitude towards quality, how quality appears within an organization, how organizational problems are handled, the cost of quality as a percentage of sales, quality improvement actions taken by management, and how management summarizes the organization's quality problems. In the final stage, the cost of quality (reported and actual) falls to about 2.5 per cent and management considers TQM as an essential part of the company system. Crosby estimated that an organization can reduce its cost of quality from 20 per cent of sales to the ideal 2.5 per cent within a five-year time frame.

Erasmus University: quality maturity

Roger Williams and Boudewijn Bertsch[14] of Erasmus University (The Netherlands) also proposed five stages of growth towards quality maturity. In contrast to Crosby's grid, Williams and Bertsch derived their model empirically using a multiple case study methodology. Their study involved eight

Summary model				
Annual budgeting	Long-range planning	Strategic quality planning	Management by policy	Strategic quality management
Crosby: quality management maturity grid[12]				
Uncertainty "We don't know why we have problems with quality."	*Awakening* "Is it absolutely necessary always to have problems with quality?"	*Enlightenment* "Through management commitment and quality improvement we are identifying and resolving our problems."	*Wisdom* "Defect prevention is a routine part of our operation."	*Certainty* "We know why we do not have problems with quality."
Williams and Bertsch: quality maturity[14]				
	Top management consensus Top management wholeheartedly embraces TQM *Company-wide education* Everyone learns fundamental concepts of TQM and problem-solving methods	*Problem solving* Departments actually apply problem solving tools to intradepartmental problems. Quality improvement teams are formed	*Quality improvement management* Management and co-ordination of the quality improvement process across the entire organization	*Total control* The total integration of quality management and business strategy
McKinsey & Company: evolution of strategic management[13]				
Basic financial planning Operational control	*Forecast-based planning* More effective planning for growth	*Externally-oriented planning* Increasing response to markets and competition		*Strategic management* Orchestration of all resources to create competitive advantage
Quinn and Cameron: organizational life cycles[15]				
Entrepreneurial Non-bureaucratic Goal is survival *Collectivity* Pre-bureaucratic Goal is growth	*Formalization and control* Bureaucratic Goals are reputation, stability and market expansion	*Elaboration of structure* Very bureaucratic Top managers are concerned with establishing a complete organization		

Table I.
An integration of four stages-of-development models

companies, located in Asia, the USA and Europe, which had already attained a standard of quality around or equal to the level of the Malcolm Baldrige National Quality Award or the Deming Prize. Williams and Bertsch's five stages are top management consensus, company-wide education, problem solving, quality improvement management and total control. The first stage – top management consensus – is reached when top management wholeheartedly embraces quality management as the appropriate means to improve productivity, achieve customer satisfaction and enhance market performance. The intermediate stages are characterized by the phased introduction of company-wide education, the use of TQM tools and techniques, the adoption of quality improvement strategies[16] and the institutionalization of TQM in the organization. In the final stage – total control – the organization achieves total integration of quality management and business strategy.

McKinsey & Company: evolution of strategic management

Gluck *et al.*[13] of McKinsey & Company studied the development of formal strategic planning systems in 120 companies, mainly industrial goods manufacturers in seven countries. They then derived a four-phase evolutionary model of strategic management. In the first phase – basic financial planning – formal planning takes place in the form of the annual budgeting exercise where everything is reduced to an operational control or financial problem. As chief financial officers start extrapolating past trends and forecasting the future impact of environmental forces on alternative financing plans, the organization enters a second phase – forecast-based planning. The third phase – externally-oriented planning – is characterized by the introduction of competitive analysis in order to respond better to competitors' offerings and market needs. The final phase – strategic management – involves the orchestration of all organizational resources (including a strategy-supportive corporate culture) to create competitive advantage. In brief, Gluck *et al.*'s model views strategic planning processes as evolving from an annual budgeting process to an integrative strategic management system.

Quinn and Cameron: organizational life cycles

Quinn and Cameron's[15] work on organizational life cycles suggested that four major stages characterize organization development. Each of these stages is characterized by a specific "need"[17] or problem whose successful resolution propels the organization into the next stage of development. Organizations advance out of the entrepreneurial stage by overcoming the crisis of leadership arising from the need to rationalize organizational activities. Progression through the second stage – collectivity – is motivated by overcoming a crisis of autonomy. This crisis arises from the need for delegation with control. The third stage – formalization and control – involves the installation and use of formal management systems and the gradual separation of strategic and operational responsibilities. The crisis of too much red tape induces the organization to move towards another stage – elaboration of structure. In this stage, the

organization develops a new sense of collaboration and teamwork. Social control and self-discipline reduce the need for additional formal controls. Managers learn to work within the bureaucracy – which may have reached the limits of its effectiveness – without adding to it. In brief, Quinn and Cameron's model moves from stages emphasizing entrepreneurship to formalization and then to organicity.

These four stages-of-development models represent the outcome of heretofore disjointed approaches to the study of strategic management, TQM processes and organizational life cycles. Although these four frameworks are based on different organizational phenomena (e.g. strategy formulation, quality maturity and life cycles), there is some consistency in the models about the characteristics of certain developmental stages. These similarities form the basis of this paper's proposed framework.

The proposed model

The integration of strategy formulation and TQM follows a predictable pattern through five evolutionary stages. These stages are sequential in nature and follow a natural progression. The proposed model in Table II enumerates the organizational characteristics associated with each of these five stages. In order to develop the hypothesized characteristics of the stages of strategy-quality integration, the author reviewed the recently published case history[18] of IBM Rochester's (Minnesota) journey to the 1990 Malcolm Baldrige National Quality Award. The model in Table II reflects the apparent consensus in the models mentioned earlier and IBM Rochester's experience in integrating strategy and TQM. The following discussion will include illustrations of leading companies in the USA and the Asia-Pacific region which are on their way to the total integration of strategy and TQM. Although these companies differ in their methodology or execution, space constraints do not permit the full presentation of these variations.

Stage I: annual budgeting

In the first stage, when the organization is relatively young, small and non-bureaucratic, organizational energy is devoted towards survival in the marketplace and the production of a single product or service. Demand is so strong at this stage that customers do not protest too loudly against mediocre quality. Specific quality values and goals, beyond lip service to quality in the form of "zero defects" and other buzzwords, are practically non-existent. Quality assurance is done by inspection, and customer needs, beyond mere conformance to specifications, are not explicitly considered in setting product and service requirements. Planning activities which do occur are primarily focused on meeting financial goals and implementing functional-area strategies. The concepts of strategic management and TQM in Stage I are synonymous with Gluck *et al.*'s "basic financial planning"[13] and Crosby's "uncertainty"[12], respectively.

Table II.
Organizational characteristics during the five stages of strategy-quality integration

Organizational characteristics	Stage I Annual budgeting	Stage II Long-range planning	Stage III Strategic quality planning	Stage IV Management by policy	Stage V Strategic quality management
Total quality management system					
Value system[18]	No specific quality values/goals	Product reliability; zero defects	Quality focus on the business process (i.e. quality of all business activities, from strategy to operations)	Quality is in the fabric of the business; total customer satisfaction	Customer as the final arbiter; quality as excellence in execution
Information and analysis	Quality control by inspection and review; quality data scarce	Prevention-based data collection in some key areas; findings not always widely or readily available	Most units collect and analyse data to prevent errors; data accessible on a need-to-know basis	Continuous improvement progress tracked in most areas; data selection and analysis criteria reviewed; data widely accessible	Organization evaluates performance using extensive measures; systems continually validated and upgraded; data universally and quickly accessible
Human resource utilization	HRM plans do not reflect quality requirements; little quality training provided; little cross-functional integration	Some managers trained in TQM; managers support teams; some cross-functional co-operation	Most managers and some employees trained in TQM; wide use of team approach to QI; team achievements encouraged; employee involvement increasing	HRM plans reflect TQM priorities; most managers and many employees trained in TQM; cross-functional teams guide many management decisions	HRM planning integrated with quality planning; participative management and high level of employee empowerment; all employees have comprehensive TQM training
	Customer needs not considered in setting product/service requirements	Limited concept of designing quality and customer needs into offerings	Customer needs shape product/service requirements; good system documentation	Prevention-based design processes; communicate requirements to suppliers	Co-operate with suppliers to meet quality standards

(Continued)

Organizational characteristics	Stage I Annual budgeting	Stage II Long-range planning	Stage III Strategic quality planning	Stage IV Management by policy	Stage V Strategic quality management
Strategy formulation[13]					
Phase of strategic management	Basic financial planning	Forecast-based planning	Externally-oriented planning	Externally-oriented planning	Strategic management
Value system	Meet the budget	Predict the future	From predicting the future to thinking strategically	Think strategically	Create the future
Time frame	Annual	Multiyear	Multiyear	Multiyear	Long term
Components	Annual budget	Gap analysis	From gap analysis to SWOT analysis	Situation analysis	Well-defined strategic framework
	Focus on functional areas	Multiyear forecasts		Competitive assessment	Strategic thinking
		Static allocation of resources		Evaluation of strategic alternatives	Coherent, reinforcing management processes
				Dynamic allocation of resources	Negotiated objectives
					Progress reviews
					Supportive value system and climate

(Continued)

Table II.

Table II.

Organizational characteristics	Stage I Annual budgeting	Stage II Long-range planning	Stage III Strategic quality planning	Stage IV Management by policy	Stage V Strategic quality management
Strategy-quality linkage	No quality planning process. Few specific quality goals. Little attention given to customer satisfaction	Strategic goals formulated. Customer satisfaction tangential to goal setting. Little or no use of competitive benchmarking to set quality goals. Lack of integration among plans	Strategic quality planning process established. Goal-setting, customer needs and competitive benchmarking used. Some participation across the organization	Customer needs a major factor in strategic planning process. Broad participation in planning processes. Quality directly influences resource allocation	Quality planning is tightly integrated with strategic planning. Long-term goals developed through competitive benchmarking of world-class standards. Customers, suppliers and other stakeholders contribute to the strategic planning process
Organizational context					
Top management style[19]	Telling	Delegating	Delegating/ participating	Participating	Selling
Basis of reward system[20]	Functional worth and individual performance	Functional worth and individual performance	Functional worth and individual performance	Functional worth and individual and group performance	Functional worth and individual and group performance
Purpose of control and measurement systems	Quality control	Quality control	Improve quality of management decisions	Early warning/ prevention	Rapid responsiveness and proactive customer satisfaction

Stage II: long-range planning

The second stage is usually precipitated by the recognition that managers must confront the long-term implications of decisions and to think about the potential business impact of forecast trends. Long-range plans are prepared to reduce the gap between forecast performance and quantitative targets. In this stage, long-range plans make random references to quality and other non-financial performance initiatives that affect the organization's cost structure and profit position. While the organization practises what Gluck *et al.*[13] referred to as "forecast-based planning", Crosby's "awakening"[12] characterizes the organization's quality management maturity.

During this stage, top management embraces quality management as the appropriate strategy to improve profitability, achieve customer satisfaction and enhance performance in the marketplace. Quality initiatives in this stage focus on improving product reliability. A typical first step in this direction is the development and implementation of a quality management system that meets ISO 9000 standards. Quality system registration to the ISO 9000 family of standards provides an internationally recognized mechanism which, if implemented appropriately, can provide assurance of product reliability[21].

By the end of Stage II, the organization initiates a company-wide education process through which everyone learns to use problem-solving methods and fundamental concepts of TQM, such as the seven statistical tools and the plan-do-check-act cycle. The level of the organization's investment in quality education and training, as well as the extent of its deployment, ultimately determines the pace with which the organization advances from this stage.

Asia Pacific Breweries (Singapore) Pte Ltd, Singapore's flagship brewery and recipient of the 1987 National Productivity Award, displays many of the strategy-quality characteristics associated with Stage II[22]. APB has a stringent quality control process which pays attention to every detail of its brews – from the crown cork to the neck label, and shape and cleanliness of the bottle. Managerial appraisal is based on the attainment of annual operational plans. These plans are, in turn, based on a five-year policy plan which is developed after APB has decided on its mission for the next five years. APB spends about 5 per cent of its annual payroll on training, compared to the 2 per cent national average in Singapore.

Another company that appears to be in Stage II of strategy-quality integration is Excel Machine Tools, a US$12 million manufacturer of precision machine tools in Singapore and a recipient of the 1993 Asian Management Award[23]. At Excel, the day begins with the company song extolling quality and corporate objectives. Excel invests heavily in human resource development, committing fully 13 per cent of its payroll to staff training and development. Company executives believe their success is due primarily to continuous investment in product and process development.

Stage III: strategic quality planning

In the third stage, top management begins trying to understand the basic marketplace phenomena driving change, rather than simply relying on market

forecasts. In their search for new ways to define and satisfy customer needs, managers look at their organization's product/service offerings relative to those of their competitors. The result is a new level of planning effectiveness, "externally-oriented planning"[13] or what is generally referred to as "strategic planning".

This stage marks the beginning of a strategic planning process that addresses explicitly quality goals, considers customer needs and incorporates competitive benchmark data. Over time, competitive analysis evolves into a higher form of comparison – benchmarking against the "best in class" both within and outside the industry. The strategic quality planning system at Cadillac Motor Car Company (1990 Baldrige Award winner) epitomizes strategy-quality integration at this stage. Cadillac's annual business plans embody short- and long-term quality improvement goals. Further, a comprehensive programme of competitive comparisons and benchmarking studies – of products, product features, services, and planning, development and manufacturing processes – provides Cadillac management and employees with a clear picture of what the division must do to maintain or achieve world-class status in each category[24].

The internal environment of Stage III organizations is similar to Crosby's "enlightenment"[12] and Williams and Bertsch's "problem-solving"[14] stages. Company-wide quality control training is virtually complete, with most managers and an increasing number of employees already trained in TQM. Problem-solving tools are actually applied to problems within departments, allowing participants to build experience and refine their problem-solving skills. Quality circles or work improvement teams are formed, and quality assurance shifts in emphasis from product reliability to a focus on the business process, that is, quality of all business activities, from strategy to operations. By the end of Stage III, the organization may have already attained a high degree of error prevention through process control.

The NTUC Income Insurance Co-operative Ltd, one of Singapore's leading insurance companies, displays some Stage III characteristics[22]. NTUC Income implements a top-down strategic planning process, coupled with a performance-based bonus system, and has integrated its work improvement teams (WITs) with its staff suggestion scheme. NTUC Income's active involvement in WITs – now involving 100 per cent of the workforce – won for it the National Productivity Award in 1988.

Another Stage III company is Far East Levingston Shipbuilding (FELS), one of the world's top builders of offshore rigs for oil exploration/drilling and the world's top builder of jack-up rigs. It is testimony to FELS's sound strategy that there are currently only a few remaining viable rig-builders in the world[25]. To make quality part of the company's culture and to drive home the concept to every employee, FELS engaged Phil Crosby Associates (PCA) in 1989 to implement its quality improvement process (QIP). By the end of 1991, 420 employees had undergone QIP training and the company has reaped cost and time savings due to greater efficiency and a more cohesive workforce. FELS

became the first company in Asia to win the Beacon of Quality Award from PCA.

Stage IV: management by policy

Stage IV advances planning effectiveness beyond Stage III with the organization explicitly employing quality as a strategic weapon. Stage IV involves the management and co-ordination of quality improvement across the entire organization and is synonymous with Williams and Bertsch's "quality improvement management"[14] stage. Quality improvement is viewed in terms of breakthrough projects. The organization progresses towards integrating quality within the entire fabric of the strategic plan by starting to implement the principles of policy deployment (*hoshin kanri*) or weaving such methodologies as quality function deployment into strategic planning activities. It is the institutionalization of policy deployment, also called "management by policy", which distinguishes Stage IV from Stage III organizations. By having successfully implemented *hoshin* planning, quality function deployment, and similar techniques for at least one business planning cycle, State IV organizations have progressed to a higher state of maturity in strategy-quality integration.

The pace of strategy-quality integration depends largely on whether the same or different sets of executives are responsible for formulating the strategic plans and the quality plans. Having the same senior executives oversee both the strategic and quality plans ensures a tight linkage between the two sets of plans. Having different sets of executives will make integration difficult since sensitive, vital financial data may be withheld from the managers responsible for the quality plan. The extent of information sharing among the planners will largely determine whether meaningful strategy-quality integration will take place and whether the organization advances to Stage V.

San Miguel Corporation (SMC), the Philippine-based food and beverage conglomerate which was identified as Asia's most admired company in *Asian Business*'s 1993 and 1994 surveys[26], exhibits the type of strategy-quality integration evident in Stage IV. During the late 1980s, SMC management articulated the vision of becoming "a world class organization with a more significant international presence, providing synergies to the domestic market"[27]. In 1988, SMC initiated a five-year, $1 billion investment programme to lay the foundation in the Philippines for expansion overseas. This investment programme ended in December 1992, rewarding SMC with extremely efficient, high-productivity manufacturing facilities. The primary theme of the investment programme was an effort by management to instil quality into every aspect of its operations. An organization-wide TQM programme put San Miguel's operations on a par with those of any Western multinational and provided San Miguel with a competitive advantage over producers that do not have extensive quality management in place.

Another Asian company that appears to have Stage IV characteristics is Perusahaan Otomobil Nasional Bhd. (Proton), Malaysia's national automobile

manufacturer and recipient of the 1993 Asian Management Award for Operations Management in Malaysia[23]. With exports growing at 22 per cent annually, Proton has managed to win over the sophisticated Asian consumer and cultivate a substantial following for its flagship car, the Proton Saga. Despite the softening British economy and Singapore's stringent restrictions on car imports, exports to these countries increased substantially. In order to achieve economies of scale in manufacturing, Proton needs exports since its current annual production is only about half of that of a typical Japanese production line[28]. Observers attribute this prodigious sales growth to Proton's total quality concept that permeates its entire operations from the corporate offices to the shopfloor.

Stage V: strategic quality management

The fifth stage represents the total integration of strategic management and total quality management. Organizations in this stage not only practise what Gluck *et al.*[13] referred to as "strategic management", but also demonstrate a disciplined customer-driven, process-oriented approach to quality planning. As the name "strategic quality management"[29] suggests, the marriage of corporate strategy and total quality management is now complete: a stage reached by only a few organizations. This successful few include mainly the winners of the different national quality awards (e.g. Malcolm Baldrige National Quality Award, Japan's Deming Prize and the European Quality Award). For these Stage V organizations, strategic planning and quality planning have merged into one seamless process, owing to a free flow of information between strategic planners and quality planners. The same senior executives drive all planning and have full access to all of the organization's databases. These same executives recognize that strategic management and total quality management are two faces of the same process of influencing the organization's success in the marketplace.

Achieving this level of integration initially appears impossible because of the amount of information, often classified, that will need to flow freely among the planners. However, when an organization reaches Stage V, everything seems to fall into place rather seamlessly. This stage is synonymous with Crosby's "certainty"[12] and Williams and Bertsch's "total control"[14] stages. The organization consciously plans for continuous improvement, gradually and incrementally doing better what is already being done. However, incremental quality improvement plans are increasingly replaced by bold initiatives such as cycle-time reduction, optimization experiments and business process re-engineering[30]. These TQM technologies seek to improve processes to realize a higher quantum of operational performance and achieve the goal of total quality. No longer internally focused, the organization becomes a true citizen of the marketplace, using world-class benchmarks to drive strategic quality management.

Singapore Airlines (SIA), considered by many to be "the world's best airline"[31] and recent recipient of the *Air Transport World's* Airline of the Year

Award[32], is a prime example of a Stage V organization. The customer is the focal point of SIA's competitive strategy and its world-class benchmarking is based on the customer's key buying criteria[25]. The quality of the service provided by the cabin crew and the ground staff has been the basis of SIA's sustainable competitive advantage. It works hard to cultivate managerial talent which SIA regards as a core competence[33]. SIA's human resource investments (a $50 million training centre and training budget amounting to 12.3 per cent of payroll) and global strategic alliances (e.g. Swissair and Delta Airlines) enabled it to make service quality a lasting advantage. It has recently entered into a highly successful joint venture with Singapore's National Productivity Board to establish the Service Quality Centre, in order to propagate the message of customer-driven service quality to businesses in Singapore.

IBM Singapore Pte Ltd, recipient of the 1987 National Productivity Award, is another Asian company which exhibits Stage V characteristics. As in SIA, quality is the cornerstone of IBM Singapore's business strategy. Its competitive strategy is based on a "market-driven quality" approach[22] which IBM has well deployed in its global operations. First developed by the Baldrige Award-winning IBM Rochester, market-driven quality represents a refinement of previous blueprints of quality strategies and is a carefully structured framework for identifying customer and market needs[18]. IBM Singapore's quality strategy is further reinforced by its investments in human resource development – 22.6 per cent of payroll spent on training and an annual average of 15 days of training per employee.

Finally, the strategic planning system being implemented by Zytec Corporation (1991 Baldrige Award winner) is the embodiment of strategy-quality integration in Stage V[24]. Zytec has adopted a "management by planning" process which involves employees in setting long-term and annual improvement goals. At an annual two-day retreat, about 150 employees, representing all types of personnel, shifts and departments, review and critique five-year plans prepared by six cross-functional teams. Zytec executives then finalize the long-term strategic plan and set broad corporate objectives to guide quality planning in the departments, where teams develop annual goals to support each corporate objective. In face-to-face meetings with teams or representatives, the chief executive officer first reviews departmental goals and then action plans, including monthly performance measures and monthly progress targets. The company also invites selected customers and suppliers to scrutinize the long-range plan, leading to further refinement.

Conclusion

The integration of strategy formulation and total quality management is a rigorous and evolutionary process. This paper proposes that this integration evolves along similar lines and at different rates of progress. This progression can be characterized in terms of five evolutionary stages, each stage marked by cumulative advances over its predecessor. The proposed model is based on an integration of existing stages-of-development theories in strategic

management, total quality management and organizational life cycles. Preliminary evidence from case studies of world-class organizations provide some support for the validity of the proposed model.

The model certainly needs to be refined and tested over a larger sample of organizations in different stages of quality maturity. This will increase the model's predictive validity and its utility to planning practitioners who have to deal with strategy and quality issues in their respective organizations. Once the model has been validated empirically, it would be appropriate to investigate the types of strategies and processes which successfully have propelled organizations from one stage to the next. One such potential strategy is investment in quality education and training which has the potential of accelerating the organization's evolutionary processes. An equally important extension is to identify the specific barriers that prevent the movement of organizations through the various stages of strategy-quality integration. The interplay of these barriers and facilitators will determine whether the evolution will be accomplished through a gradual transformation or through radical change.

References

1. Peters, T.J. and Waterman, R.H. Jr, *In Search of Excellence: Lessons from America's Best-run Companies*, Harper & Row, New York, NY, 1982.
2. Shetty, V.K., "Product quality and competitive strategy", *Business Horizons*, Vol. 30 No. 3, May/June 1987, pp. 46-52.
3. Garvin, D.A., *Managing Quality: The Strategic and Competitive Edge*, The Free Press, New York, NY, 1988.
4. White House Conference on Productivity, *Final Report of the American Productivity Center Computer Conference on Quality and Productivity*, US Government Printing Office, Washington, DC, 1983.
5. Raynor, M.E., "Quality as a strategic weapon", *Journal of Business Strategy*, Vol. 13 No. 5, September/October 1992, pp. 3-9.
6. Spitzer, R.D., "TQM: the only source of sustainable competitive advantage", *Quality Progress*, Vol. 26 No. 6, June 1993, pp. 59-64.
7. Bremer, M.S., "Linking strategic management and ongoing quality improvement", *National Productivity Review*, Vol. 8 No. 1, Winter 1988/89, pp. 11-22.
8. Akao, Y., *Hoshin Kanri: Policy Deployment for Successful TQM*, translated by G.H. Mazur and Japan Business Consultants Ltd, Productivity Press, Cambridge, MA, 1991.
9. Akao, Y. (Ed.), *Quality Function Deployment: Integrating Customer Requirements into Product Design*, translated by G.H. Mazur, Productivity Press, Cambridge, MA, 1990.
10. Walsh, M., "The strategic management of quality: a conceptual synthesis", *International Journal of Quality & Reliability Management*, Vol. 4 No. 2, 1987, pp. 38-52.
11. Schonberger, R.J., "Is strategy strategic? Impact of total quality management on strategy", *Academy of Management Executive*, Vol. 6 No. 3, August 1992, pp. 80-7.
12. Crosby, P., *Quality Is Free: The Art of Making Quality Certain*, McGraw-Hill, New York, NY, 1979.
13. Gluck, F.W., Kaufman, S.P. and Walleck, A.S., "Strategic management for competitive advantage", *Harvard Business Review*, Vol. 58 No. 4, July-August 1980, pp. 154-61.
14. Williams, R. and Bertsch, B., "Stages in the management of quality improvement programmes", in *Proceedings of the 15th Annual Conference of the European International Business Association*, Helsinki, Finland, pp. 868-79.

15. Quinn, R.E. and Cameron, K., "Organizational life cycles and shifting criteria of effectiveness", *Management Science*, Vol. 29 No. 1, January 1983, pp. 33-51.
16. Juran, J.M., *Quality Control Handbook*, McGraw-Hill, New York, NY, 1988.
17. Greiner, L.E., "Evolution and revolutions as organizations grow", *Harvard Business Review*, Vol. 50 No. 4, July-August 1972, pp. 37-46.
18. Boyett, J.H., Schwartz, S., Osterwise, L. and Bauer, R., *The Quality Journey: How Winning the Baldrige Sparked the Remaking of IBM*, Penguin Books, New York, NY, 1993.
19. Hersey, P. and Blanchard, K.A., *Management of Organizational Behavior: Utilizing Human Resources*, 5th ed., Prentice-Hall, Englewood Cliffs, NJ, 1988.
20. Arthur D. Little, Inc., *A Management System for the 1980s*, San Francisco, CA, 1980.
21. Arnold, K.L., *The Manager's Guide to ISO 9000*, Free Press, New York, NY, 1994.
22. National Productivity Board, *Management for High Performance*, NPB, Singapore, 1992.
23. "Asian Management Awards: the region's winners", *The Asian Manager*, Vol. 6 No. 4, August 1993, pp. 10-39.
24. US Department of Commerce, *Malcolm Baldrige National Quality Award: Profiles of Winners, 1988-1993*, Washington, DC, 1994.
25. Tan, C. and Soh, T.K., "Classed among the best", *Singapore Business*, August 1992, pp. 16-40.
26. McGrath, N., "Drive to expand brings applause", *Asian Business*, Vol. 30 No. 5, May 1994, pp. 20-30.
27. Alley, L. and Stanley, T., "San Miguel's expansion into Southeast Asia", *Journal of Asian Business*, Vol. 9, Summer 1993, pp. 71-91.
28. Astbury, S., "Malaysia: Proton gets competition", *Asian Business*, Vol. 28 No. 6, June 1992, p. 13.
29. Godfrey, A.B., "Strategic quality management: part I", *Quality*, March 1990, pp. 17-22.
30. Hammer, M. and Champy, J., *Reengineering the Corporation*, Harper Business, New York, NY, 1993.
31. Reier, S. and Meyer, R., "Industry winners in the *FW* CEO of the Year Contest in Asia and Europe", *Financial World*, 15 October 1991, pp. 56-64.
32. "ATA Awards 20 years of excellence…in international service: Singapore Airlines", *Air Transport World*, Vol. 31 No. 2, February 1994, pp. 43-4.
33. "How SIA nurtures high flyers", *Asian Business*, Vol. 29 No. 12, December 1993, p. 44.