

International Journal of Applied Quality Management

Volume 1 Issue 3

A light gray world map is centered on the page, showing the outlines of continents and major islands. The text is overlaid on the map.

Patterns of Quality Management in Singapore

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ISSN 1742-2647

In Search of Quality Management in Singapore.

This paper presents the findings of a survey on the practice of quality management in Singapore private sector companies. It looks at the extent of the adoption of quality management (QM), the reasons and factors leading to implementation of QM practices among Singapore companies, and how these companies have gone about their quality initiatives. The obstacles faced by Singapore companies in their quality management implementation, and the benefits are also discussed. Finally, prospects for the future are outlined.

Background

Quality management did not feature prominently in Singapore's national productivity campaigns until the nineties. The NPB (National Productivity Board) initiated TQM programme, the Total Quality Process (TQP) training-cum-consultancy package was introduced in 1991 to help companies in Singapore improve the quality of their products and services, but being co-sponsored by the Singapore Manufacturers' Association, it was first targeted at the manufacturing companies. Although the government only promoted a 'total' approach to quality management from 1991, Singapore companies were introduced to an array of quality-related practices like QC circles, Work Improvement Teams, Suggestions Schemes, 5S/ Good Housekeeping, and GMP as early as the start of the Productivity Movement in 1981. As the Productivity Movement was drawn based on a Japanese framework, the slant of the early promotional activities were primarily Japanese. The focus of Singapore's productivity campaigns in its early years was based on promoting productivity awareness among companies and the workforce, and helping them understand the significance and benefits of productivity. In particular, the inculcation of positive worker attitudes received much attention. In the early 1980s, specific themes like teamwork, skills upgrading, customer satisfaction, and quality work were used in the annual productivity campaigns. The second stage of the Productivity Movement (1986 - 1988) stressed specific actions at the workplace like skills upgrading, companies' operational efficiency and productivity. From the late eighties, the Productivity Movement shifted its aims to fostering ownership of productivity. A feature of the government's plans to foster ownership has been through the involvement of the private sector in spearheading the annual productivity campaigns. In the nineties, more TQM-related practices were introduced as the government recognised a greater need for qualitative improvements to support the country's productivity growth: a Service Quality (SQ) Centre was established to help improve the quality of service in Singapore; the ISO 9000 series of quality certification was launched in 1992; and a Benchmarking Centre was set up to equip companies and their employees with the skills to conduct benchmarking studies. In 1993, the Singapore Quality Award was also launched and with it, a template for achieving world-class quality was established to motivate companies in Singapore to emulate. More recently, the emphasis of the National Productivity Movement on quality has been linked with adopting an innovation-driven strategy.

Survey Demography

A postal self-completion questionnaire was sent to 1002 personnel managers, quality managers or chief executives from companies that were randomly selected - using stratified sampling - from those that were listed in the Singapore 1000 Industrial and Service classifications, as well as those that have subscribed to the NPB Singapore's

Total Quality Process (TQP) package and the Singapore Institute of Standards & Industrial Research's ISO 9000 certification. The questionnaires were despatched and returned in 1997. 198 usable questionnaires were returned, giving a response rate of 19.8 per cent. By employment size, the respondents appeared to be quite evenly spread. Nearly 51 per cent of respondents came from companies that were foreign-owned. Exactly half of the survey sample had sales revenue of over S\$50 million.

Table 1 maps the business environment in which the companies surveyed were operating in. Intense cost competition (77.7%) appeared to be the most extensively-faced business condition and reflects the rising labour and business costs Singapore companies have to endure. Other business conditions which have had an impact on Singapore firms included intense speed to market competition (51.5%) and intense quality competition (47.9%).

Table 1: External Business Environment in which (a) Singapore companies are operating (b) Singapore 'Quality Management' companies are operating
Respondents faced the following conditions to a large or very large extent:

	(a) Percentage of Respondents n=198	(b) Percentage of Respondents (%) n=166
Intense cost competition	77.7	85.0
Intense speed to market competition	51.5	56.7
Intense quality competition	47.9	52.5
Heavy foreign competition	40.4	44.6
Rapid change	38.4	42.7
Rapidly growing market	28.8	29.5
Shorter product life cycle	19.7	20.5
Declining markets	14.1	13.2

Quality Management in Singapore

Adoption of Quality Management Initiatives

Of the 198 companies which responded to the survey, 83.8 percent of the respondents claimed to have adopted some form of quality management initiative¹. Only 32 (16.2%) respondents had not gone down the quality route. The manufacturing sector formed the majority (62.7%) of companies implementing quality management leaving the services and construction sectors lagging some distance behind. This finding evidently reflects quality management's historical genesis in manufacturing settings. More foreign-owned firms (51.8%) appeared to have implemented quality management than Singapore-owned companies (34.9%). Similarly, more large firms have implemented quality management than the smaller firms. This may be because larger firms tend to have more resources for management innovations, including corporate staff departments to champion change and provide change-oriented support (Lawler et al, 1995).

Table 2: 'Has your company introduced a QM initiative?' (n=198)

Yes	No but plan to	No & no plans	No & don't know
83.8%	5.1%	4.0%	7.1%

As table 1 suggests, the QM initiatives of Singapore companies may have been adopted due to the pressures placed on the business like cost competition, the need to get products to the market as fast as possible, and intense quality competition. In particular, the problem of stiff cost competition was cited by 85 percent of "quality management" respondents. This indication of a possible relationship between external business conditions and quality management adoption was further analysed controlling for confounding factors and the only statistically significant relationship² between business environment and the use of quality management was found for intense cost competition. Apart from cost competition, it appears that Singapore companies have not been adopting quality initiatives because of the hostile business environment they are facing (see Table 3). These findings contrast with those of Lawler et al's (1995) study of US Fortune companies where it was found that US companies that experienced greater foreign competition and extreme performance pressures were more likely to use most of the TQM practices.

Table 3: Are external business conditions leading companies to Quality Management?

External Business Conditions	Correlation with the use of QM	
	r	pr
Intense cost competition	-0.208**	-0.173*b
Intense speed to market competition	-0.010	-
Intense quality competition	-0.168*	-0.099b
Heavy foreign competition	-0.174*	-0.067b
Rapid change	-0.110	-0.066a
Rapidly growing market	0.004	-
Shorter product life cycle	-0.025	0.030a
Declining markets	0.085	-

Note:

a - Partial correlation where industry (or sector) was controlled.

b - Partial correlation where company size was controlled.

* $p < 0.05$, ** $p < 0.01$ where p is the level of statistical significance

Origins of Quality Management Initiatives

Of the companies that had some form of quality management campaign, only 28.3 percent have been practising it for more than five years (see Figure 1) - and these came mainly from the manufacturing sector. 52.5 percent initiated quality management only in the last three years, highlighting the early phase in which Singapore companies stood on the "quality management barometer"³. There was also evidence that in the last year, many of the companies implementing quality management had come from the services sector. Besides sectoral classification, company size also seemed to play a role in determining the implementation of quality management. 68.3 percent of those companies that have had quality management in place for at least three years came from those with more than 200 employees. Statistical tests also confirmed a significant relationship between years since quality management was adopted and size of companies ($p < 0.05$): our findings indicated that the earlier adopters of quality management were mainly the larger organisations. Statistical tests of association however found that there was no relationship between years since QM adoption and ownership.

In assessing whether quality management is a long-term, open-ended commitment, nearly all (94%) firms in the survey said that quality management is an on-going process (Figure 2), thus appearing to refute the notion that the "quality bandwagon" is just a management fad. In fact, only one company in the whole survey has discontinued their quality initiative and only 4.8 percent indicated that their quality management campaign was to run for less than five years. However, as many organisations have just recently adopted quality management, only time will tell whether quality is a passing fad or a long-term commitment for these companies.

Figure 1: 'When was QM introduced to your company?' (n=166)

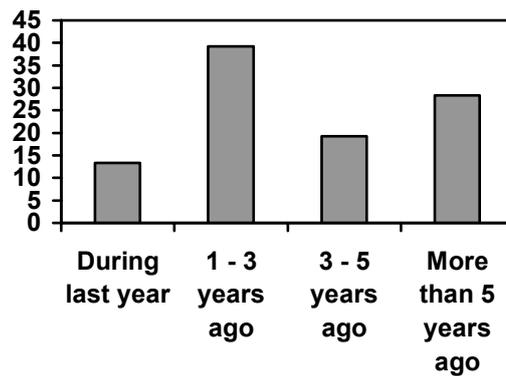
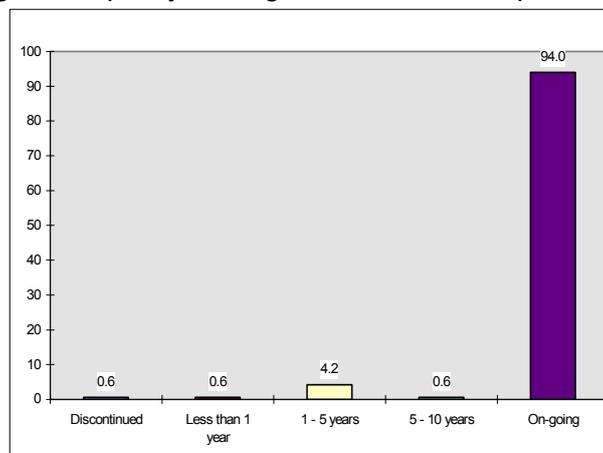


Figure 2: 'How long is the quality management initiative expected to last?' (n=166)



Why Quality Management?

In considering the objectives of quality management in the individual companies, respondents were asked to rate the top three priorities of their company's quality management initiative. Based on the sum of their scores, Table 4 was constructed. Singapore "quality management" firms seemed to regard the improvement of product/service quality as the most important objective, followed closely by improving customer satisfaction. Another major reason for implementing quality management by Singapore companies appeared to be the increasing recognition that quality management, through the ISO 9000 quality system, can satisfy customers' demand. In contrast, conventional business objectives, like improving profitability or reducing costs, were not as highly rated by QM firms, thus suggesting that possibly more

Singapore companies are realising the eventual long-term impact of quality management on corporate bottom-line.

Table 4: The Objectives of Quality Management in Companies (In order of times mentioned, weighted by ranking given)

	Points
To improve quality of products/service	190
To improve customer satisfaction	185
To satisfy customer demands (e.g. ISO 9000)	165
To improve competitive advantage	115
To improve productivity	114
To reduce costs	58
To increase profitability	58
To streamline working practices	37
To support organisational change	35
To improve corporate image	22
To improve employee relations	7
Other	3

Implementing Quality Management

Customisation of Quality Management Initiative

Companies in Singapore seemed to be customising their quality initiatives using their own local in-house staff (65% of those who customised) more than management consultants (40% of those who customised). This may have been because they felt that their own staff understood the workings and culture of their organisations better and were thus more able to customise the quality process to cater for their own organisational styles and needs. Another plausible reason for more companies customising their quality processes internally may have been the fall in credibility of 'one-two-three steps' approaches to quality improvement, often espoused by management consulting firms, which do not take note of differences and distinct circumstances of organisations (Cole, 1993). In many such 'canned' TQM packages, the culture and peculiarities of individual companies are usually hardly catered for, resulting in a 'one-approach cure-all' that fails abysmally.

With respect to industry and ownership effects, statistical tests recorded no associations between the customisation of quality management initiative using management consultants and these two company characteristics. However, a significant relationship between employment size and the use of management consultants in the customisation of QM initiative was recorded ($p < 0.05$): the likelihood of using external consultants in the customisation of QM was found to decrease with increasing company size. This may have been because larger companies with their vast internal resources felt better equipped to introduce QM on their own using a corporate programme initiated - in some cases - by head office, while smaller companies needed a certain amount of 'hand-holding' by external consultants before they could confidently take over the QM implementation.

Respondents who have implemented a quality management initiative in their companies were asked about their pre-implementation diagnosis process. Among the tools commonly utilised to examine how the quality process should be applied, 64.5 percent of survey respondents cited that they used organisational systems and process analysis. The evaluation of production process and employee

consultation/participation (cited by 56% and 55.4% of respondents respectively) were also important diagnosis tools used by Singapore companies. The survey evidence showed that operational or production-based diagnosis were more widely used than employee attitude surveys in the diagnosis process, thus implying that quality management among Singapore organisations might be more operations-driven than human resources-driven. Even the expectations of customers were hardly surveyed before quality management was implemented. Looking in greater depth at the use of diagnosis tools like evaluation of production process and employee consultation, significant associations ($p < 0.001$) between business sector and the use of these tools were found (Table 5). From the contingency tables, more manufacturing companies, than expected, evaluated their production processes as part of their QM diagnosis process, while more non-manufacturing firms used employee consultation as part of the QM diagnosis process. More foreign-owned and joint venture firms than expected, also employed the evaluation of production processes in the diagnosis process ($p < 0.05$) (see Table 6). Tests of association between company size and the use of tools in the quality management diagnosis process showed no significant relationships, with the exception for the use of external customer surveys ($p < 0.05$): more large-sized companies, than expected, were found to use these customer surveys.

Table 5: Associations between Company Characteristics & Use of Tools in the Diagnosis Process

Association= $\sqrt{p < 0.05}$ No Associations= x ($p < 0.05$)	Business Sector	Company Ownership	Company Size
Organisational systems & Process Analysis	x	x	x
Evaluation of Production Process	$\sqrt{***}$	$\sqrt{*}$	x
Employee Consultation/ Participation	$\sqrt{***}$	x	x
Analysis of organisational structure/effectiveness	x	x	x
External Customer Survey	x	x	$\sqrt{*}$
Employee Attitude Survey	x	x	x

Responsibility for Quality Management

On the allocation of responsibility for quality in the organisation, 56 percent of respondents saw it as lying with all employees, while 24.1 percent saw the responsibility for quality with senior management. Only 10 percent said that responsibility for quality lay with QC specialists. This finding appears to be consistent with the conventional quality literature, which emphasises that quality management should not be left to a specialist function, but should be the responsibility of everyone in the organisation, with the senior managers having particular responsibility for establishing the leadership and commitment to quality.

Quality management was usually co-ordinated by a manager/officer who undertook the job as part of a wider portfolio of responsibilities (57%). However, there were around 36 percent of respondents that have an officer employed solely to co-ordinate quality management. For those firms that have a co-ordinator for its quality initiative, the officer/manager usually came from the QC/QA function. From the survey, there

were also numerous accounts of companies using a quality management or steering team - consisting of senior managers from multi-disciplines - to co-ordinate their quality management efforts: such an effort seemed to be favoured by many companies as they felt that the quality message will only be realised if there is top-down leadership.

Extent of Employee Involvement

An average of 44.9 percent of employees was estimated by our respondents as being involved in their firm's quality management initiative⁴, while an average 36.6 percent of employees was found by our survey respondents to be involved in small group activities (SGAs) like quality control (QC) circles, cross-functional teams and problem-solving groups. These figures appear to suggest that organisations in Singapore are still far from having 'total' employee involvement in quality management, as espoused by the normative literature (Oakland, 1993). A comparison with a 1993 research study done of the Fortune 1000 corporations also found that TQM programmes in the US on average covered only 50 percent of employees (Lawler et al, 1995).

There were no significant correlations between business sector and the extent of employee involvement in either the small group activities or the quality management initiative. Nor were there significant relationships between company ownership and employee involvement in the quality management initiative or small group activities. The extent of employee involvement, however, revealed a dependence on company size ($p < 0.05$): the larger companies showed higher percentage of employees being involved in the quality management initiative (see Table 6).

Table 6: Relationships between Firm Characteristics (including Experience with QM) and Extent of Employee Involvement in the Quality Management Initiative and Small Group Activities (SGA's)

Association= $\sqrt{}$ ($p < 0.05$) No Association= \times ($p > 0.05$)	Business Sector	Company Ownership	Company Size	Experience with QM
Percentage of Employee Involvement in the Quality Management Initiative	\times	\times	$\sqrt{*}$	\times
Percentage of Employee Involvement in Small Group Activities	\times	\times	\times	\times

While lack of education and training of employees may be cited as one explanation for the low rate of employee involvement, a more plausible reason for the low rate of participation, especially with SGAs, may be the bad experiences companies have had with such employee involvement practices in the past, in particular the superficial impact of QC circles and Work Improvement Teams (WITs) (Cheng, 1986; Wilkinson, B., 1986). Circles were first introduced in Singapore in 1973, and since then, these employee participation mechanisms have had a rather 'chequered' history. While government statistics paint a rosy picture of employee involvement in Singapore organisations, the reality is less optimistic: over two-thirds of workers involved in SGAs come from the public sector, where involvement in WITs (as QC circles are

often referred to by the government departments) is often involuntary, rather than by choice⁵. Employee participation in private sector QC circles has not had as much success: for one, most QC circles in the private sector are semi-voluntary and pressure on employees from management to form QC circles are not as high.

The Usage of Quality Management Practices

In implementing a quality management process, companies can adopt a series of quality-related practices to achieve their objectives of managing quality. Table 7 gives a number of these common quality management practices. While the pattern of usage appeared widespread, our survey gave evidence of companies abandoning certain quality-related tools. The quality management practices are grouped under three key headings: core practices, production-oriented practices, and other practices. The first six practices are the core practices that tend to be adopted by most companies as they become increasingly involved in quality management or TQM. The five production-oriented practices are so identified because they make up a related set of efforts that are adopted primarily in production settings. These practices tend to be used where the work is routine and measurable, most frequently in manufacturing settings, but also in white-collar throughput-oriented environments.

Among the core quality management practices, the adoption of quality mission statement and corporate vision statement, and the Quality Management Team were the most often cited probably due to the simplicity in putting these practices in place: over 80 percent of "quality management" companies used each of these three practices. Two-thirds of companies also used cross-functional problem-solving teams as part of their quality process. Although more than half of survey respondents indicated that they were using QC circles and Suggestion Schemes as part of their quality campaign, there was also a fair proportion (17.5% for QC circles and 15.7% for Suggestion Schemes) of companies which have discontinued their usage as well. The discontinuations probably also reflect the failure of and disillusionment with QC circles and Suggestion Schemes in Singapore companies.

Of the five production-oriented practices, the most frequently used was 5S/Good Housekeeping (62.7%). Good Manufacturing Practices (GMP) have also been implemented by some 46 percent of companies with quality management initiatives. Not as many companies however have implemented Statistical Process Control (used by front-line employees) and Just-in-time (JIT) Production possibly because practices like JIT Production require significant changes to an organisation's work methods, inventory procedures, and a whole host of organisational practices, before they can be implemented and such major adjustments usually scare most companies into inertia. However, of those companies that have implemented 5S, SPC, JIT Production, and Good Manufacturing Practice, they were mainly - and not surprisingly - from the manufacturing sector.

Quality days were the least implemented QM practice (18.7%). Similarly, quality incentives and competitive benchmarking have each been adopted by just over a third of respondents. Companies were, however, keener on implementing structured on-the-job training (75.3%) and on collaborating with suppliers on quality issues (62.0%).

Table 7: Quality Management Practices & Their Usage among Singapore Firms (n=166)

QM Practice	Currently being used	Percentage of Respondents (%)	
		Discontinued	Not used at all
Core QM Practice			
QC Circles/WITs	53.6	17.5	28.9
Cross-functional problem-solving teams	66.3	1.8	31.9
Quality Management Team	81.3	6.0	12.7
Suggestion Scheme	52.4	15.7	31.3
Corporate Vision Statement	83.1	0.6	16.3
Quality Mission Statement	86.1	2.4	11.4
Production-oriented Practices			
5S/Good Housekeeping	62.7	5.4	31.9
SPC used by front-line employees	38.6	1.8	58.4
JIT Production	30.1	1.2	68.1
Good Manufacturing Practice	45.8	1.8	51.2
Total Preventative Maintenance	42.2	1.2	56.6
Other Practices			
Quality Days	18.7	2.4	78.9
Quality Incentives	36.1	4.8	59.0
Competitive Benchmarking	37.3	3.0	59.6
Structured On-the-job Training	75.3	1.8	22.9
Collaboration with Suppliers in Quality Efforts	62.0	0.6	36.7

Different industry sectors have also taken to quality tools and approaches differently. The manufacturing sector seemed to dominate in the use of all the quality management approaches surveyed. This may be due to the greater number of responses to the survey from the manufacturing companies. Statistical tests, however, found significant associations between the manufacturing sector and some quality management practices surveyed like cross-functional problem-solving teams ($p < 0.05$), 5S/Good Housekeeping ($p < 0.01$), Statistical Process Control ($p < 0.0001$), JIT production ($p < 0.0001$), Good Manufacturing Practice ($p < 0.0001$), structured on-the-job training ($p < 0.01$), and collaboration with suppliers on quality efforts ($p < 0.0001$) (see Table 10 for a summary). Besides the production-oriented practices, it was interesting to note the bias of manufacturing companies towards the use of cross-functional problem-solving teams, structured on-the-job training and suppliers collaboration in quality efforts.

The adoption of many quality practices, like suggestion schemes ($p < 0.05$), 5S ($p < 0.01$), statistical process control ($p < 0.05$), Good Manufacturing Practice ($p < 0.01$), Total Preventive Maintenance ($p < 0.001$), quality days ($p < 0.05$), quality incentives ($p < 0.05$), structured OJT ($p < 0.05$), and collaboration with suppliers ($p < 0.01$), showed that they were significantly related to the experience of companies in quality management (see Table 8): the long-term QM adopters were found to use these practices, especially TPM, 5S and Good Manufacturing Practice, more extensively than expected, possibly because these practices require companies with greater experience in quality management to implement.

Table 8: Associations between Firm Characteristics (including Experience with Quality Management) and the Use of Quality Management (QM) Practices

QM Practices (,=Significant Assocn; r=No Significant Assocn.)	Business Sector1	Company Ownership2	Company Size3	Experience with QM4
QC circles/ WITs	x	x	x	x
Cross-functional problem-solving teams	√*	x	x	x
QMT	x	x	x	x
Suggestions scheme	x	x	x	√*
Corporate vision statement	x	x	x	x
Quality mission statement	x	x	x	x
5S/Good housekeeping	√**	√*	x	√**
SPC used by front-line employees	√**	x	x	√*
JIT Production	√****	√*	x	x
GMP	√****	x	x	√**
TPM	x	x	√*	√***
Quality days	x	x	√**	√*
Quality incentives	x	x	√**	√*
Competitive benchmarking	x	x	x	x
Structured OJT	√**	x	x	√*
Collaboration with suppliers in quality efforts	√****	√**	x	√**

Note: These results were generated using the contingency tables, Chi-square and other nominal measures of association.

p<0.05; ** p<0.01; *** p<0.001; **** p<0.0001, where p is the level of significance

(1) Where they exist, all statistically significant associations between QM practices and sector showed that the manufacturing sector used these practices more widely than expected.

(2) Where they exist, all statistically significant associations between QM practices and ownership showed that foreign-owned and joint venture firms used these practices more widely than expected.

(3) Where they exist, all statistically significant associations between QM practices and company size showed that the larger firms (>500 employees) used these practices more widely than expected.

(4) Where they exist, all statistically significant associations between QM practices and experience with QM showed that companies with more experience with QM used these practices more widely than expected.

Extent of Quality Standard Certification

Over seventy-one percent of respondents were found to have achieved a recognised quality standard and of this figure, most have adopted the ISO 9000 quality management system. Only 13.9 percent of respondents have not achieved a quality standard certification and these companies came mainly from the services sector. The manufacturing sector appeared to have the highest proportion of ISO 9000-certified companies reflecting the growing demand for certification from purchasers of manufactured goods from abroad as well as locally. Among the construction firms surveyed, all have been or are currently aiming to be certified to ISO 9000 standard primarily because quality certification is a government requirement for Singapore's construction sector. The services sector seemed to subscribe to the ISO 9002 standard more than the ISO 9001 standard, showing the lower design content of service industries.

Companies that have achieved a recognised quality standard - whether this be the ISO quality system or some other standards required by their customers - saw quality

certification as an ideal means to improve quality in their organisations: 74 percent of survey respondents claimed quality certification to have had a successful impact on quality improvement. The sector to which companies belong to influences whether and when they were certified to a quality standard. Over 90 percent of companies that were certified more than 3 years ago came from the manufacturing sector.

Extent of TQM Practice

While the widespread adoption of quality management tools and techniques by organisations are often seen as being ad hoc and piecemeal (see Lillrank and Kano, 1989; Hill and Wilkinson 1995, Wilkinson et al, 1998, Kolesar, 1995), this survey found the Singapore companies claiming otherwise: 92.6 percent of "quality management" respondents saw their ultimate implementation as a company-wide effort under the umbrella of Total Quality Management. This compares with the 64 percent reported in a 1992 survey by a Singapore management consulting firm (Lee, 1992). Another study found that 65.1 percent of companies that were aware of TQM actually practise it (Goh & Yeo, 1994).

Table: 9: Company-wide or 'Partial' Quality Management (n=163)

'Is the ultimate implementation of quality management company-wide (i.e. is a 'total' or 'holistic' approach to quality management adopted)?'

Yes	No
92.6%	7.4%

Training and the Singapore Company

Much has been stressed about the importance of skills development on national competitiveness (see Porter, 1990; Reich, 1991; NPB Singapore, 1994). Without the right skills, companies will find it difficult to operate viably; and on a macro level, a country will find it equally difficult to attract inward investments in order to maintain its competitive advantage. For Singapore, this issue of training or skills-upgrading is very pertinent as the city-state finds itself having to compete for higher value-added investments.

In this survey, the scope and extent of training provided by companies in Singapore to improve quality were examined. Table 10 provides a fuller picture of the types of training employed by firms in Singapore to improve quality and productivity. Among the quality-related training provided, quality awareness and job skills training appeared to be among the most popular among survey respondents: over three-quarters of "quality management" respondents have sent their staff on quality awareness and job skills training. Leadership and team-building skills were separately cited by more than half of the "quality management" respondents, thus reflecting the importance of such 'soft' skills to Singapore companies implementing quality management. Nearly sixty percent of respondents also indicated that their staff have undergone group decision-making / problem-solving skills.

Quality or statistical analysis skills, although cited by 52.4 percent of companies, were given lesser importance (when compared to the other softer skills) by companies in Singapore.

Table 10: 'What types of training has your company provided to improve quality?' (n=166)

	% of "QM" Respondents
Quality Awareness Training	85
Job Skills Training	77.1
Group Decision-making/ Problem-solving skills	59.6
Leadership Skills	69
Quality/Statistical Analysis Skills	52.4
Team-building Skills	51.2
Customer care Skills	41.8
Cross Training	31.3
Others	4.2

While the types of training appealed differently to different companies, there was consensus among companies on the importance of training. This was reflected in the extent of overall training provided to improve quality at different levels of the organisational structure. At the senior management level, an average 74.7 percent of this group have been trained, while 73.1 percent of middle managers and supervisors have been provided with quality-related training. Among the shop-floor or front-line employees, an average 60.9 percent have undergone some form of quality-linked training.

Measurement for Quality Management

Nearly all (98.8%) of the responding companies used some form of measurement in order to improve quality. The main indicators used included customer complaints, failure/reject rates, delivery performance and market research.

Table 11: Quality Measurements used by Singapore Companies (n = 166)

	% of Respondents
Customer Complaints	84.8
Failure Reject Rates	63.4
Delivery Performance	62.2
Market Research/Customer Feedback	51.8
Cost of Quality	38.4
Warranty Claims	25
Employee Attitude	21.3
Others	7.3

From the statistical tests and contingency tables, more manufacturing firms appeared to use indicators like failure/reject rates ($p < 0.0001$), and warranty claims ($p < 0.05$), than expected, while more companies from the non-manufacturing (including construction) sector made use of market research/ customer feedback ($p < 0.05$), delivery performance ($p < 0.05$), and employee attitude measures ($p < 0.001$). Between ownership and use of measurement indicators, no significant associations were found, with the exception of failure/reject rates ($p < 0.05$): more foreign-owned and joint-venture companies seemed to favour using reject rates to measure quality. Company size, however, was not statistically associated with the use of any of the measurement indicators surveyed. However, long-time QM adopters were found to be significantly more likely to use failure/reject rates, and cost of quality.

Incentives for Quality?

More than half of survey respondents indicated that their companies tied rewards to quality work. Fifty-two percent of companies said their organisations used quality indicators in the formal appraisal of employee performance, while 42.2 percent stated that such indicators were included in the appraisal of managers' performance. Forty percent said that quality indicators were included in the performance-related pay or bonus system in their companies.

Despite the significance in the usage of performance-related pay and quality indicators in the formal appraisal of employee and management performance, there were no associations between these and company characteristics like sector, ownership, and company size, with the exception of that between the use of QM indicators in the formal appraisal of managers' performance and size of company: the statistical test found that as company size increases, the use of QM indicators in the formal appraisal of managers' performance also increases.

The use of quality-related incentives by Singapore companies seemed to go against the 'conventional' wisdom that pay should not be linked to quality. According to the quality gurus (see Crosby, 1979; Deming, 1986) and academics (see Oakland, 1993; Drummond and Chell, 1992), paying for quality undermines the commitment of the individual, replacing it with an instrumental, calculative approach. Instead the gurus argue that quality improvement should be rewarded with recognition, praise and symbolic rewards in place of monetary incentives. Not unlike a British study (Snape et al, 1995), our findings appeared to indicate otherwise: correlations with performance outcomes showed that the use of quality-related pay can lead to more positive results in QM success, direct work performance and profitability and market share (see Table 12).

Table 12: Correlations between Usage of Quality-related Pay and Performance Outcomes

	Quality-related pay
Mean	1.55
S.D.	0.36
Corr. with QM success	0.205*
Corr. with Direct Work Performance	-0.254**
Corr. with QWL & Employee Satisfaction	-0.142
Corr. with Profitability & Market Share	-0.194*

Note:

1. These correlation results were generated using zero-order Pearson's correlations.
2. $p < 0.05$; ** $p < 0.01$ where p is the level of significance

The importance of quality-related incentives to Singapore companies probably reflects the cultural peculiarities of Asian societies, especially that of Singapore's. According to a comparison of Asia-Pacific organisational strategies, Singapore workers were found to be more in favour of being rewarded on the basis of their work performance rather than their behaviour (like loyalty, honesty) (Lasserre & Schutte, 1995). "*Praise and a pat on the back*" can only go so far (Snape et al, 1995) and in societies, like Singapore, where cash has been used as the traditional measure of value, it is not surprising that quality-related monetary incentives are much favoured. The tight labour market and general affluence of Singapore society has somewhat created an attitude among workers, especially the younger generation who see their

work as temporary and are prone to leaving for "a few dollars more" to work in the next company (Tan, 1995). It is against such a back drop that an Asian survey (commissioned by 'Incentives and Meetings Asia') of employers found that 60 percent of Singapore companies gave cash incentives in order to motivate employees in their work (The Straits Times, 16 June 1995).

Obstacles to Quality Management

It appears from Table 13 that the lack of commitment from organisational members played an impeding role on quality management. While trade unions did not pose a threat to the implementation of quality management, poor commitment from the middle and lower levels of the organisation posed a serious problem for Singapore companies. Fifty-seven percent of respondents found that the lack of commitment from middle managers and supervisors was an obstacle to the adoption of quality management. The possible reasons for such management resistance are numerous: for one, managers are fearful that by empowering their subordinates, they would lose their power (Marchington et al, 1992) and this problem of seeing their level of discretion being reduced is especially acute among the lower level managers (Wilkinson et al, 1994). Another explanation may be that middle managers - having not been trained in the quality philosophy and lacking understanding of the objectives of quality management - resent it for making their jobs more demanding (Wilkinson et al, 1993) or taking too much of their time.

Commitment problems were, however, not limited to the middle managerial levels; 63.3 percent of our survey respondents cited that lack of commitment from the front-line employee level was a barrier to any quality improvement efforts. There were several suggestions that this may be due to a lack of a quality mindset among employees:

"We have introduced many quality improvement tools. However, we lack a quality mindset or culture (Kaizen)...that is (probably) why we have been unable to achieve a breakthrough in quality improvement."

"QC circles are seen by staff as a chore and add little value to their work."

While commitment from senior management did not fare as badly as that from the lower levels, it was nevertheless cited by 35.6 percent of companies as an obstacle to the implementation of quality management. Commitment and leadership from top management have often been said as being critical for the effective implementation of quality management - without managerial commitment, it is inevitable that commitment from the lower levels would not be forthcoming. This view on the need for management commitment seemed to be echoed in the qualitative comments of respondents:

"A quality management initiative requires the direction and leadership of the top management who should be willing to change themselves as well as the organisation as a whole."

"Management support has not been visible and effective. Management's effort is seen as TALK but without follow-up action". (The emphasis is as appeared in the survey returns)

"Our efforts (i.e. middle managers) in introducing TQM in the company is generally thwarted by the lack of management commitment towards the effort."

The lack of interest in commitment, I suspect, arises from a few critical factors, namely:

- (i) A lack of knowledge among the senior managers;*
- (ii) Little understanding of TQM and its benefits;*
- (iii) Lack of skills;*
- (iv) Other more pressing business issues;*
- (v) A joint venture company resulting in different company goals."*

Table 13: Problems of Organisational Commitment (n=166)

	% of Respondents		
	Major Obstacle	Minor Obstacle	Total
Senior Management	15.7	19.9	35.6
Middle Managers/Supervisors	17.5	39.8	57.3
Front-line Employees	17.5	45.8	63.3
Trade Unions	1.8	10.2	12.0

Contrary to conventional wisdom, commitment difficulties did not seem to affect the pattern of employee involvement in the overall quality management initiative nor in Small Group Activities. It was, however, interesting to find that the use of monetary incentives seemed to contribute to garnering commitment from organisational members to the quality initiative: in particular, there were significant relationships between the use of monetary incentives tied to quality and greater commitment from the middle management and front-line employees ($p < 0.05$).

The quality of employees was cited by 78.3 percent of respondents as an obstacle to quality management. Poor work attitudes among staff and the excessive use of foreign workers, with little education and skills, seemed to be the main worries of Singapore companies. Although inevitable due to the shortage of local labour, the use of foreign workers has created an increasing dilemma among companies in Singapore as *"these workers have little concern with the long-term survival of their employers"*. According to Cole (1993), contingent workers have *"less invested in the firms and predictably are less concerned about maintaining, much less, improving quality"*. Apart from commitment, these foreign workers in Singapore are usually less-educated and unskilled and can only contribute to rather low value-added work. Employers are further unwilling to give these contingent workers extensive training as these workers are usually in Singapore for relatively short stints.

Table 14 lists the other obstacles faced by Singapore companies in their quality management efforts. Among the key obstacles, lack of time and short-term performance pressures seemed to dominate, with over three-quarter of Singapore companies citing them as obstacles to quality management. Such findings call to question whether Singapore firms' quality emphasis will be easily superseded when other business criteria like cost and schedule objectives become more pressing. Comments made by one respondent seemed to illustrate this worry:

"The quality management initiative is hampered by short-term performance pressures. The type of technology is labour intensive and the outputs are low value-added. Profit concerns necessitate staff to work the full seven day week, averaging 12 hours per day. There is little time nor energy to follow through (quality management consultant's) recommendations, however, logical and well-intentioned."

The problem of labour turnover is a perennial one in Singapore, especially in the economic boom at the time of the research, where demand for workers exceeds supply. Hence, it was hardly surprising that high employee turnover was cited by 65.6 percent of respondents as a problem, with 28.3 percent seeing it as a major obstacle to the implementation of quality initiatives. Labour turnover has a detrimental effect on organisational memory as the company loses not only an 'extra pair of hands' when an employee leaves a company, but all his operational knowledge and experience - which cannot be totally documented - and the trust he has built up with the customer (Cole, 1993). Because employee turnover is a pervading issue in the island-state, another related problem is that companies are reluctant to spend much money on training staff⁷ - whether in quality tools or otherwise, and this inevitably impedes on any efforts to improve quality and creates a vicious cycle of low employee morale and dissatisfaction with the company, leading to job-hopping.

Table 14: Obstacles to Quality Management (n=166)

	% of Respondents		
	Major Obstacle	Minor Obstacle	Total (Major & Minor)
Quality of employees	25.9	52.4	78.3
Lack of time	34.9	42.8	77.7
Short-term performance pressures	23.5	53.0	76.5
High employee turnover	28.3	37.3	65.6
Keeping quality management going	18.7	42.2	60.9
Lack of tangible improvements	16.9	41.6	58.5
Quality of management (e.g. managerial skills)	14.5	48.2	62.7
Lack of long-term quality strategy	21.1	36.7	57.8
Measuring quality	15.7	41.0	56.7
Seen as a production/ operations concern only	13.3	39.2	52.5
Clash with other initiatives	13.3	38.0	51.3
Lack of training	12.7	38.6	51.3
Negative work climate	7.8	39.2	47.0
Worsened business conditions	11.4	33.1	44.5
Lack of a business crisis or threat	3.0	36.1	39.1
Lack of a quality infrastructure in Singapore	3.6	25.9	29.5

More non-manufacturing companies than expected found keeping quality management going ($p < 0.05$), measuring quality ($p < 0.01$), and the quality initiative clashing with other programmes ($p < 0.05$) as great obstacles to quality improvement. Quality management being seen as only an operations concern was a bigger issue among the manufacturing ($p < 0.05$) and the foreign-owned firms ($p < 0.05$), while high employee turnover as an obstacle to the quality initiative was found to be significantly associated with company ownership ($p < 0.05$). The statistical test found that the locally-owned companies had greater problems with high employee turnover than their foreign counterparts probably because the remuneration, working conditions and stability of foreign companies are more attractive to Singaporean workers.

Benefits of Quality Management

In Singapore, while there is much publicity on companies adopting TQM or ISO 9000, not much attention, however, has been given to studying the performance outcome of these quality programmes. Over 84 percent of companies in our survey rated their

quality management initiatives as at least 'reasonably successful' and of this figure, 9.4 percent saw their quality programme as 'very successful' (Table 15).

Table 15: 'How would you rate the success of your quality management initiatives?' (n=159)

	%
Reasonably successful	74.9
Very successful	9.4
Don't know yet	13.8
Unsuccessful	1.9

Table 16 further outlines the actual outcomes or achievements of quality management and these have been clustered into 3 groupings. The first factor reflects the work performance outcomes that can be directly impacted by employee behaviour. The second factor consists of employee outcomes as a result of the company's implementation of quality management. The third factor contains overall company performance outcome: market share and profitability.

The impact of quality management was reported as being positive on all factors surveyed. In terms of direct work performance outcomes, Singapore companies viewed quality management to have made positive improvements. In particular, 93.4 percent of companies cited that their QM initiatives have improved the quality of their products/services, while 89.8 percent reported improvements in overall customer satisfaction and 86.8 percent reported an improved speed of response to customers.

Almost 95 percent of companies agreed that quality awareness was increased as a result of their QM initiatives. Improvements in employee satisfaction, teamwork and communications were also strongly indicated by "quality management" companies. However, the impact of QM on reducing labour turnover, improving labour-management relations, and decreasing absenteeism were not as significant: rather, 62 percent of respondents indicated that their quality management initiatives had no effect on absenteeism while 55.4 percent had similar views on labour turnover. On the impact on labour-management relations, 41.6 percent found their situations unchanged even after implementing quality management: these results may be thus because of the relatively harmonious industrial relations climate that exists in Singapore companies, with or without the adoption of quality management. Nearly 67 percent of companies reported that QM has improved their bottom-line, while 60.3 percent indicated that their market share has increased as a result of their quality management efforts.

When industry, company size and years of QM experience were correlated with performance outcomes, significant correlations were found between industry and profitability & market share; and between company size and direct work performance. The experience of companies with quality management seemed also to be significantly correlated with the performance outcomes: long-term QM adopters (that is, those with >5 years QM experience) found higher satisfaction in their direct work performance ($p < 0.001$); QWL & employee satisfaction ($p < 0.05$); and profitability & market share ($p < 0.01$). Besides the greater experience that they have, long-term adopters showed more positive outcomes because they have mastered most of the quality management tools: It was found that companies with more than 5 years QM experience differed significantly from the more recent QM adopters on at least nine quality-related practices.

Manufacturing companies also saw quality management as having made a greater impact on their profitability and market share. This might be because manufacturing companies have been implementing quality management for longer and thus have more diverse and a better command of the QM tools and techniques: as manufacturing establishments made significantly greater use of practices like cross-functional problem-solving teams, QMT, structured OJT, supplier collaboration in quality efforts, quality standard as well as the production-oriented practices, than their service counterparts.

Table 16: 'What effect has the quality management initiatives at your company had on each of the following?' (n=166)

	% of Respondents						
	Mean	Major Deterioration (1)	Minor Deterioration (2)	No Effect (3)	Minor Improvement (4)	Major Improvement (5)	Missing / NA
Direct Work Performance Outcomes							
Cost Efficiency	3.97	1.2	3.6	15.1	53.6	22.9	3.6
Productivity	4.14	0.6	1.2	14.5	48.2	32.5	3.0
Quality of Product/ Service	4.38	0	1.8	3.0	49.4	44.0	1.8
Speed of Response to Customer	4.31	1.2	1.2	8.4	44.2	44.6	2.4
Overall Customer Satisfaction	4.33	0.6	0.6	6.0	48.8	41.0	3.0
QWL & Employee Satisfaction							
Quality Awareness	4.57	0.6	0.6	1.8	34.3	60.2	2.4
Employee Satisfaction	4.03	0.6	2.4	14.5	53.6	24.1	4.8
Teamwork	4.30	0.6	1.2	7.2	48.2	40.4	2.4
Vertical Communications	4.20	0	1.2	10.2	53.0	31.9	3.6
Lateral/Cross-functional Communication	4.24	0	1.2	8.4	51.2	33.7	5.4
Labour Turnover	3.28	3.0	6.6	55.4	24.1	7.8	3.0
Labour-management Relations	3.61	1.2	3.6	41.6	28.9	16.3	8.4
Absenteeism	3.26	1.2	6.0	62.0	19.9	6.6	4.2
Profitability & Market Share							
Profitability	3.88	1.2	3.6	21.7	45.2	21.7	6.6
Market Share	3.79	0.6	2.4	30.1	42.8	17.5	6.6

Impact of Quality Management Practices

All the quality approaches and practices included in the survey were found to have made a positive impact on quality improvement in the companies practising them but the degree of impact varied as is shown in Table 17. Evaluation of each quality approach's impact was based only on those companies that have utilised them in their quality management implementation.

Among the approaches that have made significant impact on quality improvement, structured on-the-job training, quality management or steering team, cross-functional problem-solving teams, Total Preventive Maintenance and QC circles topped the 'major improvement' list. In sharp contrast, only 68 percent of the companies that used quality days cited it as contributing to at least 'minor improvement' in quality, with modest 21 percent citing that quality days created 'major improvements' to the firm's quality.

Table 17: Effect of Quality Management Practices on Quality Improvement

Practices	n	Percentage of Respondents (%)		
		Major Improvement	Minor Improvement	Improvement (Total)
Quality Steering Committee / Quality Management Team	145	57.2	40.7	97.9
Quality Mission Statement	144	27.8	58.3	86.1
Corporate Vision Statement	141	24.1	58.2	82.3
Structured On-the job Training	125	57.6	36.8	94.4
5S / Good Housekeeping Practices	118	35.6	60.2	95.8
Cross-functional problem-solving teams	115	50.4	42.6	93.0
QC circles / WITs	115	41.7	53.0	94.7
Suggestions Scheme	111	23.4	56.8	80.2
Collaboration with Suppliers in Quality	104	36.5	51.0	87.5
Statistical Process Control	79	34.2	51.9	86.1
Quality Initiatives	79	29.1	59.5	88.6
Total Preventative Maintenance	77	45.5	48.1	93.6
Good Manufacturing Practice	77	35.1	54.5	89.6
Competitive Benchmarking	72	34.7	44.4	79.1
JIT Production	57	38.6	36.8	75.4
Quality Days	47	21.3	46.8	68.1

When the quality management practices were cross-tabulated against sales revenue, it was found that the usage of some practices were significantly associated with sales: according to our survey findings, more companies that used quality control circles, quality days, quality incentives, and competitive benchmarking than expected, showed higher sales revenues.

When each of the QM practices were correlated with performance outcomes, statistically significant correlations were found for many of the QM practices. The relationships between practices and outcomes varied, as is shown in Table 18. Correlations between quality attributes and direct work performance found that the use of eleven QM practices were significantly associated with better direct work performance and among these, the use of cross-functional problem-solving teams, suggestion schemes, quality days, quality incentives, GMP, TPM, collaboration with suppliers in quality efforts, quality measurements, off-the-job training, management and employee commitment were correlated with their outcomes. The use of QMT, quality days, quality incentives, off-the-job training, and management commitment were also found to be significantly correlated with employee satisfaction and better quality of work life among the employees, while companies that rated themselves more successfully in their QM practices appeared to use practices like structured OJT, competitive benchmarking, TPM, off-the-job training, quality-related pay, and

have higher management and employee commitment. There were also many significant associations between QM practices and company profitability and market share. While the statistical tests showed significant QM performance correlations, they did not prove that QM caused performance to improve, but only that associations existed. Positive performance outcomes may give rise to the use of QM practices, or the use of QM and performance may both be caused by some third factor not measured in the survey.

Table 18: Correlation between the Use of QM Practices & Performance

	Mean	S.D.	Corr. with QM success	Corr. with Direct Work Performance	Corr. With QWL & Employee Satisfaction
CONTEXTUAL FACTORS					
Industry	1.37	0.49	0.084	-0.044	0.012
Company Size	3.82	1.42	-0.074	0.192*	-0.013
QM Practices					
QCCs/WITs	1.46	0.50	0.126	-0.097	-0.146
Cross-functional problem solving	1.34	0.47	0.118	-0.191*	-0.106
QMT	1.19	0.39	0.109	-0.091	-0.200
Suggestion schemes	1.47	0.50	0.051	-0.191*	-0.152
5S/Good housekeeping	1.37	0.49	0.038	-0.149	-0.146
Structured OJT	1.25	0.43	0.178*	-0.123	-0.028
Quality days	1.81	0.39	0.085	-0.0209**	-0.167*
Quality initiatives	1.64	0.48	0.105	-0.243**	-0.157*
Corporate vision statement	1.17	0.38	0.010	-0.118	-0.051*
Quality mission statement	1.14	0.35	0.157	-0.119	-0.081
Competitive benchmarking			0.318****	-0.118	-0.020
SPC	1.61	0.49	0.094	-0.104	0.040
JIT Production	1.70	0.46	0.139	-0.081	-0.048
GMP	1.54	0.50	0.163	-0.160*	-0.136
TPM	1.58	0.50	0.172*	-0.195*	-0.120
Collaboration with suppliers in quality efforts	1.38	0.49	0.084	-0.156*	-0.060
Quality Measurements	1.01	0.11	0.030	-0.213**	-0.084
Training (off-the-job)	1.43	0.27	0.194*	-0.278****	-0.195*
Quality Standard	1.79	0.68	-0.055	0.074	0.164
Management Commitment	2.34	0.67	-0.230**	0.184*	0.192*
Employee Commitment	2.17	0.71	-0.241**	0.181*	0.078
Quality-related pay	1.55	0.36	0.205*	-0.254**	-0.142

Conclusions

The myriad of practices discussed in this survey does not equate to depth or quality of implementation, neither does it imply implementation of a holistic approach to QM. The general picture is that the private sector firms in Singapore have started strongly with a good grasp and application of leadership-related QM activities like QMT, quality vision and mission statements. They also appear to have made good use of employee-centred activities like training, cross-functional teams and QC circles, and process-centred approaches like measurements of quality, and 5S Housekeeping. However, in the more process-oriented QM practices, companies however have been slow on the up-take.

Of concern is the low involvement of employees in the overall QM initiative. On average, companies in Singapore had less than 45 percent of their employees participating in QM activities at their workplaces. A key finding was the discovery that many QM practitioners were abandoning QC circles and suggestion schemes, reflecting the growing disillusionment of such bottom-up practices in Singapore. Furthermore was when companies were asked of their intentions in applying for the Singapore Quality Award (SQA): 62.7 percent of QM practising respondents said that they had no plans of vying for the SQA. Might these figures be an indication that companies in Singapore are still far from being holistic in their implementation of quality management?

Nearly 72 percent of QM respondents to the national survey indicated that they have only been practising QM for less than five years, with more than half of the respondents having adopted such practices since 1992. These findings should probably not be surprising because if one compares with organisations in the United States, or Europe, we will find the notion of a holistic approach to quality management was only introduced there in the eighties. Compared to the Japanese, who have been implementing TQC practices since the 1950s, Singapore's foray into a company-wide approach of QM has been relatively late.

With the exception of 5S, ISO9000 and measurements of quality, process-centred practices like JIT production, TPM, SPC, and competitive benchmarking have not been as widely implemented, even among the manufacturing companies where the historical origins of QM lie and where technical aspects of quality improvement is supposedly more warmly welcomed (Lawler et al, 1992). One explanation may be the low education and training of employees, which hinders the adoption of such technically-complexed practices.

While QM implementation is dominated by the manufacturing sector, we are also seeing many service companies in Singapore playing catch-up. However, the attributes and differences of the services sector are also recognised, and this is highlighted, for example, in the choice of measurements of quality of the various sectors. While Singapore manufacturers stuck to the traditional reject rates, and warranty claim, the intangibility of services meant that the service sector had to make greater use of indicators like customer feedback, delivery performance, and employee attitude, to improve their processes. Greater effort has been made by the service providers to understand customers' needs since much of these companies' work is based on their contact with the external customer. Claims of QM success were also not seen to be significantly associated with the larger or foreign-owned companies, which supposedly have greater managerial expertise and practise QM more extensively. Probing further, we however found the impact of QM to be more

qualitative than quantitative in outcome. The impact of QM was seen to be most significant on the 'softer' elements like improvements in quality awareness, speed of response to customers, quality of products and services, customer satisfaction, and teamwork.

As for QM's influence on cost efficiency, profitability, and market share, Singapore companies were less forthright in declaring outright success in these measures. QM has not affected organisational performance negatively, but few firms testified to a complete transformation of bottom-line figures or market share as a result of QM adoption. Of course, there are other factors apart from a focus on quality that also affects bottom-line figures. Nevertheless, many companies saw their quality initiatives as still to have some way to go, and they are still some distance from declaring QM as their 'common sense about work'.

Another key roadblock to QM appears to be a lack of time to implement QM. The argument here appears very much a management-induced obstacle since it highlights that leadership commitment to QM is not strong. Short-termism has long been recognised as the bitter-pill of TQM. Sometimes, quality efforts can become a "jump-from-one-technique-to-another" exercise as companies try to maintain the momentum of QM in the company. Not unlike QM experiences of UK companies (see Dale and Cooper, 1992), quality-related training is sometimes not followed through or reinforced with actions, and this can easily build up to cynicism among employees as they see it as yet another management hype.

Despite the feverish implementation of TQM programmes by companies the world over, some writers have started to pen TQM's obituary. These commentators (e.g. Oliver, 1993; Caulkin, 1997; Gill and Whittle, 1993; Micklethwait and Woolridge, 1996) have derided TQM as yesterday's solution, and as the latest management 'flavour-of-the-month' or 'fashion' to become outdated. It has also been described as being part of a general phase of management fads, which enjoyed early stages of 'enthusiasm' and 'activity', but is now feeling the wave of 'disillusionment' from practitioners, who are being courted by the 'next stage panacea' (Gill and Whittle, 1993). Among the factors contributing to the backlash against quality management and TQM, the blind faith and heavy reliance of managers in simplistic step-by-step approaches, supplemented by a prescriptive 'bag' of techniques, promising to solve all operational and quality woes near-overnight comes in for much censure. The techniques-driven style of TQM seems to dominate the current wave of QM adoption among Singapore companies. TQM is increasingly being 'balkanised' into 'smaller spheres of influence' (Patton, 1994) like ISO9000 systems, QC circles, Suggestion Schemes, cross-functional taskforces, TPM, JIT production, 5S Housekeeping and so on. Although there is nothing fundamentally wrong with the principles postulated by these techniques, they are often used ineffectively by managers, and the outcome has been one in which there has been little fit between the techniques, and the realities of companies. Some companies implement one technique after another without some of these techniques ever coming close to solving any of the firm's on-going predicament. However, from the experiences of some Singapore companies, there appears to be a continual need to provide variety in their quality programmes, although not necessarily due to the failure of a technique, but to ensure that employees do not get bored. Indeed according to Huczynski (1993), managers and workers are more *"receptive to new ways of achieving fundamentally the same old business objectives. This does not mean that the old approaches are incorrect, only that they are seen as boring. Managers seek new answers to old questions that do not depend on past explanations"* (p 280).

In Singapore, a 'canned' approach to TQM is common among practitioners, but this usually does not seem to address the fundamental people issues or the market conditions of companies - thus compounding the short shelf-life of a holistic approach to QM. Thus, there needs to be more creativity and planning among firms in tailoring quality activities that meet the cultural diversity of their workforce and Singapore's operating environment. However as a philosophy, TQM is not dead in Singapore, but its partial implementation by companies has not helped in its public receptivity. Wilkinson et al (1997) has referred to current practices in the UK as being a bastardised form of TQM, where quality initiatives are being coloured by TQM opposites like Taylorism, traditional economic theory and a dominance of the financial function (pp. 188). This seems to be the case with Singapore QM companies, where QM implementation still looks piece-meal and less than strategic in outlook, and the benefits so far are limited to 'soft' improvements. Companies implementing QM in Singapore need to 'normalise' TQM (Greene, 1993), and fully incorporate quality values into the culture and daily running of their businesses.

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Endnotes

¹ From this point onwards, the % of respondents questioned refers to the % of respondents who have implemented quality management (n=166) and not the % of all survey respondents (n=198)

² Partial correlations (controlling for sector and company size) was used. The results seemed to suggest that only intense cost competition led Singapore companies to adopt quality management.

³ Compared to Singapore where quality management was only vigorously promoted since the early nineties quality management has been practised in US organisations since the early 1980s while the Japanese have been at it since the mid-1950s.

⁴ Using inference statistics, the mean employee participation level in the QM movement in Singapore has been calculated to be between 39.0 and 50.7 percent.

⁵ In Singapore's Ministry of Defence (Mindef), the participation rate in Work Improvement Teams (WITs) is 100% as all national servicemen are expected to serve in Mindef's QC circles. Each year, some 16,000 men leave the national service with QC circles' training and experience, thus providing a large pool for companies to draw upon (Teo, 1996).

⁷ This is despite efforts by the government to introduce SDF training incentives. Through the SDF training schemes, companies only have to pay a portion of the training costs and will consequently not lose as much should the trained employee leave the firm.