

## Techniques

# Total quality management and the performance measurement barrier

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### Abstract

Total quality management is now a comprehensive management system. Yet many companies are still trying to combine TQM with an inappropriate performance measurement system to their own detriment. This article points out the dangers of overreliance on traditional financial and cost-based measurement systems. The essence of the problem is that financial information does not focus on the client's needs nor on whether the company is meeting them. The article then provides ten guidelines on how performance measurement systems have typically changed in companies that have successfully implemented TQM. These guidelines can be used by companies to identify weaknesses in their own performance measurement systems.

## Introduction

In the last decade quality has gone global (Feigenbaum, 1991), and with it total quality management. Total quality will continue to remain a strategic issue for competitiveness far into the next century in a global economy characterized by intense competition and continually increasing customer demands.

Total quality management is an organization-wide philosophy that strives to continually improve quality and customer service, while simultaneously pushing down costs (Gill and Whittle 1992). Underlying TQM is a process of continuous improvement to ensure that the company continues to meet its customers' rising needs and expectations (Hodgetts, 1993, p. 75).

It is not difficult to find evidence to sing the praises of TQM. Unfortunately, there is also voluminous evidence of TQM disasters (*The Economist*, 1992). Many costly TQM programs have yielded insignificant quality benefits.

Several reasons for the poor performance of many new TQM initiatives have been put forward. This article explores one explanation which has received wide support from researchers (Johnson, 1992; Johnson and Kaplan, 1987; Wruck and Jensen, 1994), the continued reliance on outdated traditional performance measurement systems.

## Performance measurement systems

Performance measurement systems are means of gathering data to support and co-ordinate the process of making decisions and taking action throughout the organization. Appropriate measurement systems are crucial to ensure the successful implementation and execution of strategies such as TQM, since measurement provides the link between strategy and action (Sinclair and Zairi, 1995).

What you measure is what you get – measures ... drive what people do and shape the results they achieve (Johnson, 1992, p. 105).

Many companies that have implemented TQM strategies have found that their traditional performance measurement systems do not provide this link. Traditional systems are those that rely heavily on financial and accounting data for monitoring and controlling the processes in the company (Johnson

and Kaplan, 1987). These systems show most of the following characteristics:

- they provide aggregated information relatively infrequently;
- they follow top-down approaches with most information centred on management;
- operational control is based on variances from budgeted standards; and
- reward systems are tied primarily to financial performance.

The use of financial data became very popular in the 1950s when it was seen as cost-effective to place every product line in a separate department subject to the financial discipline of strong corporate staff. A vast number of companies still persist with these old systems, because changes are considered unnecessary, too troublesome or too costly. For example, when UK managers think of performance information they still think almost exclusively of financial and accounting information (Jeffries, 1993).

What is wrong with traditional performance measurement systems? The essence of the problem is that financial information is largely irrelevant, because it does not come from the client and does not focus on the client's needs (Johnson and Kaplan, 1987). These systems are typically removed from the customer and therefore unaware of the customer's real requirements or whether the company is meeting them.

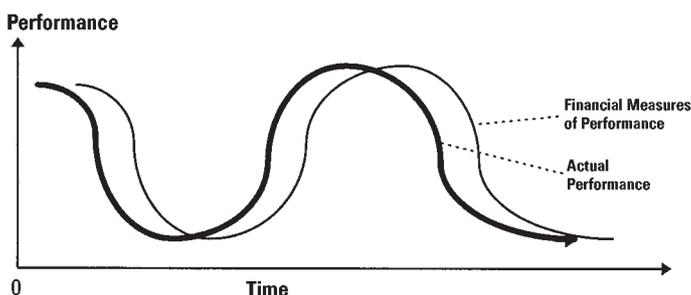
The following is a list of the most common shortcomings of traditional performance measurement systems:

- The collection and manipulation of financial data take so long that it is useless for rapid decision making when it finally reaches the user (Figure 1). "To delay information by compiling and transmitting it through accounting channels is antithetical to the imperative of responsiveness"

(Johnson, 1992). Financial results come too late to be used to steer a company effectively. "This is because your present profit may be the result of decisions made many years ago but just coming into fruition. It is like trying to steer a boat by the wake left several miles behind" (Hampden-Turner, 1990, p. 206).

- The use of financial data to set goals and control actions typically lead to manipulation of output levels to achieve cost targets. Overhead costs per unit are kept low by running every decoupled, individual process in a way that achieves the maximum economies of scale, with total disregard to defect levels or later rework costs. "Smart managers" who need to boost income know-how: go into overtime and produce for inventory. Quality costs, storage costs and eventually total costs rise and quality drops. To keep overheads per unit low in a TQM environment requires not volume increases, but the continual removal of constraints in the production process, thereby eliminating unnecessary activities and costs.
- Top-down financial performance information encourages management by remote control. Financial information easily takes on a life of its own. Johnson and Kaplan (1987) see financial information as the shadows projected by the real images. Managers very quickly turn to controlling the shadows, instead of controlling the images that create the shadows.
- Financial data does not identify unnecessary complexity. Poor financial results may indicate the existence of problems, but offer no insights into the sources of waste or the opportunities for improvements and cost savings through continuously linking and improving processes. Managers can only guess at that.
- Many traditional financial performance systems completely ignore the client. Doing what it takes to send a customer the right output on schedule will often reduce a department's efficiency rating. Since standards are considered optimal, there is no focus on or motivation for improvement.
- Financial goals, such as to achieve a 25 per cent return of capital, provide no inspiration to employees. The biggest part of the

Figure 1 Time delay between performance and financial measures



workforce gain no or limited advantage from maximizing company profits. Such measures are also far removed from their day-to-day tasks.

- Opportunities for improvements are typically not utilized due to the one-time reduction in financial measures this would cause. Many financial measures encourage managers to adopt a short-term perspective, e.g. deferring research and development and maintenance, or postponing training and capital investments. Activities such as organizational learning, that cannot be evaluated in financial terms are also left unfunded.

Oscar Wilde once defined a cynic as a person “who knows the cost of everything and the value of nothing”. This is an apt summary of the inherent flaws of most traditional financial and cost-based performance measurement systems.

### The TQM performance measurement system

But there is a better way. Successful TQM companies have realized that they have to break from the almost religious adherence to financial measurement systems. Ten fundamental changes frequently occur in the performance measurement systems of companies that have successfully implemented TQM. Although they are most easily implemented in manufacturing enterprises, they are general enough to be applied in any sector with a little customization. These principles can be used by TQM companies to identify weaknesses in their own measurement systems.

#### Principle 1

The performance measurement system must place significant emphasis on the quality strategies of the company. The goals of an organization committed to TQM are total customer satisfaction and continuous improvement in quality, flexibility and responsiveness throughout the organization. Performance information must prompt behaviour that satisfies these TQM imperatives. Every company needs to identify a unique set of key indicators which will measure its performance in terms of its strategic quality goals (Hodgetts, 1993). The aim then is to continually reduce these measures and

bring them closer to the zero-defect, 100 per cent customer-satisfaction level.

The most basic quality goals relate to reject units, rework units, scrap units and down time (Daniel and Reitsperger, 1993). TQM companies also devise a variety of indicators to track their teams' overall success at removing delay, excess and variation, for example:

- *actual total time/minimum time* ought to have spent were there no delays;
- *use rate/demand rate* (measures balance of processes balance to final demand);
- *actual number of pieces per workstation/minimum number of pieces needed per workstation* (measures excess work-in-progress).

A company that steadily pushes these ratios towards a value of one must be manifesting the earmarks of behaviour leading towards flexibility and customer responsiveness (Johnson, 1992).

#### Principle 2

Performance measurement information must be freely available at all levels in the organization to encourage employee empowerment. Employees should be given access to all the information they need to carry out their tasks as far as possible (McNerney, 1996). The maxim is: “if in doubt, release it”. Employee empowerment is a joke without ownership of information. To empower without information is to increase frustration, distrust and conflict. Constant learning by employees is the key to continuous improvement. Information is the key to constant learning. Leading companies experiment with innovative ways to distribute information, e.g. graphs, e-mail, etc.

Companies must however guard against an information overload. “Information is still supplied on a need-to-know basis, the difference being that a lot more people need to know a lot more than was previously thought” (McLagan and Nel, 1996). There is often a desire to hold on to vital information as ownership of information can be used as a source of power and control. Such sub-optimal behaviour goes against all quality values and must be dealt with quickly and strictly. Unfortunately the root of the problem frequently lies with top management.

#### Principle 3

Performance information must be relevant, user-friendly, reliable and frequent. It is

necessary to create a clear link between performance measures and action. Workers need to receive up to date performance information otherwise they have no way of knowing whether their actions are improving performance. Like many things in life, the answer lies in simplicity: indicators in an easy-to-use format that are immediately available and understandable (Babicky, 1996). And yet simplicity is by its nature elusive. It requires dedication, skill, understanding and effort. With too many indicators, attention and understanding are spread too thin for the average worker to deal with them effectively.

#### **Principle 4**

The performance measurement system must place a strong focus on performance information that directly measures customer satisfaction and responsiveness to customer requirements. TQM views the entire company as a customer-satisfying organism and sees customer satisfaction as the most important requirement for long-term organizational success. To achieve this goal the performance measurement system must be outward-looking. Having the customer in charge puts a premium on information that concerns the customer's real needs. What did the customers want? Did they like what they received? Would they have preferred something else?

The challenge is to translate the "voice of the customer" into measures of performance which the organization can identify with and improve upon (Dale and Boaden, 1993). Successful companies track many internal and external indicators of customer satisfaction: number and analysis of customer complaints, timeliness in handling complaints and deliveries, error rate in documentation etc. Customer surveys also represent indispensable quality feedback which cannot be obtained from internal sources. "Companies must ceaselessly refresh their knowledge of what customers want and ceaselessly devise new ways to satisfy these wants" (Johnson, 1992).

Many of the companies measure customer satisfaction in terms of continuing sales orders (repeat sales as percentage of total sales): if customers come back, they must have been happy with the product or service they received last time. Companies also monitor enquiries and orders. One company matches one against the other (called their "strike

rate") to measure the company's success at turning enquiries into orders (Lothian, 1987).

#### **Principle 5**

Performance measures must encourage and enable employees to control and improve processes. To control processes, performance indicators must be such that they do not stimulate or promote short-term manipulation of processes. A balanced scorecard of performance measures must be used that contains different points of view, e.g. internal and external. This presents managers with perspectives from customers, internal processes, and continuous improvement activities to supplement traditional financial indicators.

To improve processes, performance information must guide employees to continually remove constraints and "simplify" processes, thereby increasing flexibility. This requires linking all processes in a chain of internal customers. If you identify who receives your output, it allows you to ask that team about such things as their requirements and expectations which can then be translated into meaningful measures (e.g. timeliness, defect rates and so forth). Customer needs, whether internal or external, become the driving force in the development of performance measures.

#### **Principle 6**

The departments and functions responsible for producing performance information must be totally committed to their service responsibility in the organization and aim to cater for all levels of employees. There is no room for the traditional top-down, take-it-or-leave-it mentality. Measurement systems are service functions and only have a right to exist if they add value to the organization. This principle challenges the performance measurement system to commit itself to the core idea of TQM which is customer service and satisfaction, including internal customers.

The system must aim to collect and deliver the information that every unit really needs to satisfy its "internal customers" and eventually the external customer. This necessitates routine enquiries about the usage, usefulness and appropriateness of the performance measures it is providing (McNerney, 1996). It must also participate in training employees to evaluate information and translate it into actions that solve problems and improve

performance. Skilled use of information requires training.

### Principle 7

The performance measurement system must show a healthy apprehension for financial indicators and actively promote the use of non-financial indicators. The shortcomings of financial indicators have already been discussed. Non-financial measures however, tell employees factually what the problems are and whether the solutions and changes being implemented are having the desired effects (Babicky, 1996).

### Principle 8

Performance measures must not be used as weapons and not used to punish or blame. Learning is error-driven. Honest mistakes should be viewed as independent of those who make them, and as learning opportunities for everybody (McLagan and Nel, 1996). McNair *et al.* (1990) see this as using performance measures to coach, as opposed to keeping score. Traditional systems frequently use performance measures to evaluate personal performance, and punish or reward individuals, rather than providing information that help people and teams improve.

### Principle 9

Benchmarking must be used consistently to ensure the appropriateness of internal standards and to vitalize the continuous improvement process. Instead of aiming to improve only against previous internal performance and scores, leading companies use benchmarking to inject an external element into their quest for progress.

Benchmarking requires a great deal of time and effort to collect data from external sources, and many companies have found it useful to benchmark across industries.

Obtaining information from non-direct competitors is much easier, but equally useful.

...BAA benchmarks not only against foreign airports, but with companies with similar problems, like Wembley Stadium and Ascot racecourse with the similar challenge of moving, parking and feeding thousands of people in a confined space within a short period (Van de Vliet, 1996).

### Principle 10

More extensive use must be made of subjective data. This should be integrated into the performance measurement system and

regarded as a valuable source of quality information. Subjective data are based on opinion or estimates, while objective measures are based on independently-observable facts.

Both are needed to improve performance.

Objective measures have the advantage of not being biased by whomever is providing the opinion or the estimate ... Conversely, subjective measures provide a wealth and variety which is not obtainable from objective measures alone...

e.g. customer perceptions of product quality (White, 1996). It enables companies to break from their fixed moulds of beliefs about their customers to truly understand their needs and preferences. Holland and Dey (1996) describe this as "making sure you're on the right frequency".

Subjective information includes external sources of quality information, such as customers, suppliers and competitors; as well as contextual information, i.e. issues like the company's values, strategy, strengths, weaknesses, market, competitors and customers. It facilitates employees' understanding of the big picture and builds a common vision of where the company is heading and how it hopes to get there. Table I provides a comparison of traditional versus TQM measurement systems.

### Examples

Federal Express, a world leader in customer service and quality, applies many of these principles in its innovative measurement system. The company uses twelve indicators to measure service and quality which they call service quality indicators (SQIs). Each of the 12 SQIs is tracked and monitored on a daily basis and the overall performance is reported to everybody through charts. These are the only indicators that are tracked on a daily basis.

Each SQI item is given a weight on a scale of one to ten. Damaged packages, lost packages and packages not picked up, all carry a weight of ten, due to their seriousness and bigger impact on customer satisfaction than other SQIs. Items that carry a weight of five include packages that have lost their identification tags, packages delivered late, and client complaints not adequately resolved the first time. The purpose of these measures is to motivate the workforce to continually improve service and quality by focusing on reducing

**Table I** Traditional versus TQM performance measurement systems

Traditional measurement systems	TQM measurement systems
<ul style="list-style-type: none"> <li>• Financially driven (past focus)</li> <li>• Limited flexibility: one system serves both internal and external needs</li> <li>• Not linked to operative strategy</li> <li>• Focus on shareholders</li> <li>• Goal is to decrease costs</li> <li>• Vertical, top-down reporting</li> <li>• Cost, output, quality viewed in isolation (quality often completely ignored)</li> <li>• Focus on individual punishment and incentives: individual learning</li> </ul>	<ul style="list-style-type: none"> <li>• Customer-driven (future focus)</li> <li>• Dedicated to responsiveness and flexibility</li> <li>• Linked to TQM strategies</li> <li>• Focus on total customer satisfaction</li> <li>• Goal is improved performance</li> <li>• Horizontal, empowering reporting</li> <li>• Quality, delivery, time and cost evaluated simultaneously</li> <li>• Focus on group incentives and organizational learning</li> </ul>

the score on the SQIs. Customer surveys are also performed systematically for bigger clients. Federal Express won a prestigious Malcolm Baldrige Quality Award in 1990 (Hodgetts, 1993).

Johnson (1992) gives the example of another former winner of the Baldrige Award, which he calls Company J. In Company J performance measurement information is compiled by product line and this is done by people everywhere (as opposed to a centralized information department). The data are presented in a series of twelve graphs that appear on notice boards all over the company.

Data for 11 of the 12 graphs come from operations people, e.g. average set-up time per job by department; process time per minute of elapsed time; number of defect claims from customers; on-time completion of contract percentage; down time percentage; number of line stops per day; and amount of inventory. Only one of the 12 graphs gives cost information obtained from the accounting department, namely “total cost down” percentage. This shows the change from month to month in total costs by product line. Everyone in the company hopes to see total costs go down, but the personnel devote their primary attention to the process variables (11 of 12) that affect total cost and not to the total cost indicator (1 of 12) itself.

### Empirical evidence

The practical support for these principles was tested with a short questionnaire. A total of 40 questionnaires were completed by partners in the consultancy divisions of four of the “big six” audit firms’ London offices. This method was chosen because of these people’s

extensive practical experience of TQM and performance measures through advising a variety of clients in these fields. Three questionnaires were not used because they were incomplete or because the participants indicated that they had a below average knowledge of TQM or of performance measurement. The participants were asked to evaluate each statement on a scale from 1 to 5, with 1 representing “strong disagreement” and 5 indicating “strong agreement”. Table II ranks the average support for the principles from high to low.

As a whole, the questionnaire data strongly support the principles. None of the statements drew negative support, while the participants on average stayed neutral on principles 8 and 9.

The results for statement 9 suggest that in practice the use of benchmarking is still not as widespread as some authors believe. The biggest problems that spring to mind are the difficulty and the expense of gathering appropriate benchmarking information. As has been mentioned, some companies have found a solution to these problems in across-industry benchmarking.

Statement 8 is the bottom of the ranking table. The concern of many TQM writers is that, if remuneration is linked to performance measures, the financial performance of departments or functions may be manipulated over the short term to obtain maximum bonuses, to the detriment of the company. They therefore warn that this link must be treated with care. Thoughtful companies can however circumvent the dangers successfully.

Many world-class TQM companies that enjoy high employee commitment, like Federal Express, do use compensation packages that put a significant portion of pay

Table II Ranking table for performance measurement principles.

The typical performance measurement system of TQM manufacturing companies, as compared to the performance measurement system of non-TQM manufacturers ...		Average score achieved On 1-5 scale: 1 – strongly disagree; 5 – strongly agree
Rank	Implication	
1.	2...gives a higher visibility to performance measurement information and makes it more freely available at all levels in the organization	4.3
2.	3...provides more up to date information more frequently	4.1
3.	4...places a stronger focus on performance measures that directly measure customer satisfaction and needs	4.0
4.	7...promotes use of non-financial performance measures more actively	3.9
5.	6...is more responsive to the real needs of the people who actually use the information, while also spending more time and effort training employees to use performance information appropriately	3.8
6.	5...is more likely to use a balanced set (balanced scorecard) of performance measures	3.8
7.	10...makes more extensive use of subjective data; and values it higher as a source of quality information	3.7
8.	1...focuses more predominantly on quality goals, as opposed to other goals, e.g. financial	3.6
9.	8...is less likely to link performance measures to individual remuneration, or to use them to punish or blame individuals	3.2
10.	9...uses benchmarking more frequently	3.1

at risk through profit-and-risk sharing schemes. But these schemes often have a broad base to prevent selective manipulation, e.g. a certain percentage of the total company profit is set aside for bonuses and everybody shares in that proportionally provided they have met certain criteria. The criteria are also not only financial, but include issues such as training modules completed, quality goals reached, leadership shown, team co-operation, and participation in employee suggestion programs.

## Conclusion

The primary purpose of the performance measurement system is to prompt behaviour and decision making that will promote the company's strategy. This is only possible if the measurement system is changed proactively with the adoption of a new strategy such as total quality management.

In successful TQM companies the performance measurement system moves away from a predominantly financial focus to also develop a quality and customer focus; embraces non-financial measures which directly measure quality performance; becomes more responsive to employees' real needs at all

levels; and becomes more outward-looking towards customers, competitors and suppliers. In line with the TQM philosophy, the performance measurement system sees its goal as satisfying its internal customers, instead of forcing top-down, useless information onto them.

Unfortunately, many companies are fiercely resisting any changes to their traditional performance measurement system, thereby undermining their TQM effort. Performance measurement information can be an important resource in its own right, but can also severely hinder improvements. Companies ignore this fact at their own peril at a time when many traditional sources of competitive advantage are being swept away. Is this resource lying dormant in your company? Or worse, is it obstructing change?

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## Commentary

*We can't do better than echo the author's concluding questions. Is your performance management system helping you to improve quality? Is it obstructing quality improvement?*