

# Should Activity-based Costing Be Considered as the Costing Method of Choice for Total Quality Organizations?

*Steve R. Letza and Ken Gadd*

## Introduction

Recent studies suggest that as many as 80 per cent of organizations implementing total quality management (TQM) are failing to show any tangible benefits. This is generating a backlash against TQM, with many observers not only pronouncing its impending doom, but advocating newer management philosophies. TQM involves companies radically operate, both internally and externally. Fundamental to TQM is the continuous improvement of business processes. This involves a substantial cost. There is therefore a need for senior management to demonstrate an improvement in business performance to justify the change.

Traditional management accounting techniques are geared towards external financial reporting. While companies reorganize their departments to accommodate TQM, they rarely reorganize their finance departments and accounting procedures. Management is therefore attempting to measure a new business philosophy with techniques that were not designed for that purpose. Marginal costing is designed for short-term use, while total absorption costing involves a blanket absorption of overheads that does not reflect actual usage. It is hardly surprising then that companies three to five years into their TQM programme fail to show tangible benefits. They are measuring the wrong things.

Activity-based costing (ABC) has developed over the past decade into activity-based management. It is essentially an accounting system that measures the use of resources by activities. "Cost drivers" are then used to ascribe the costs of those activities to items generating the activities, e.g. products, customers and company infrastructure. It therefore allows a more accurate costing of overheads according to their actual usage.

Resources are consumed by activities according to processes. ABC is therefore accounting at the process level, and therefore measures at the same level as TQM operates. ABC therefore can generate the accounting information that is needed for TQM to evaluate costs. ABC may provide the tool necessary for TQ organizations to demonstrate tangible benefits and visible increases in business performance.

This article examines total quality management and activity-based cost management, with a view to identifying common features and thus their compatibility as contemporary management tools.

## Total Quality Management

The names of Deming and Juran are now legendary with regard to:

- the success of Japanese industry;
- the quality movement.

It was, however, Feigenbaum[1] who first published the concept of total quality in the USA. From the early work of these pioneers, TQM has now become a management system and

philosophy that is being embraced by an ever-increasing number of Western businesses as a means of developing increased competitiveness. Over recent decades organizations that have embraced TQM have become increasingly successful and consequently there has developed an expectation of TQM as being the answer to all business difficulties.

In recent years, the number of companies subscribing to TQM principles has increased at an unprecedented rate. For these companies, TQM has promised increased competitiveness, increased customer satisfaction, reduced costs and increased bottom-line results. However, there has been a similar increase in the number of companies pronouncing the failure of TQM to “deliver the goods”, and now many observers are predicting the demise of TQM altogether, as they turn their attention to other more fashionable business philosophies. In recent surveys, up to 80 per cent of companies say that TQM has failed to produce the results expected.

There have been several reasons given for this. Undoubtedly the most common is a lack of management commitment to achieving a quality culture. However, equally as common is the lack of seeing any identifiable benefits in business performance. Quite often these pronouncements are made less than two years into a TQM programme, well before any long-term gains have been realized. This short-term focus on business results is typical of senior managers dominated by the need to be seen to perform by “the City”. However, short-termism is only one thing. If tangible benefits cannot be seen to be resulting from the implementation of TQM, it is only sound commercial sense to ask the question – “are senior managers pursuing the correct strategy by continuing to implement TQM?”.

If TQM improves competitiveness by focusing on customer satisfaction, one might expect an increase in turnover and market share, as customers buy better quality goods from the TQM organization. There is therefore a strong customer focus with regard to business results. Another major theme of TQM is the reduction in the costs associated with poor quality, i.e. waste, rework, returned goods. This should lead to increased profitability. In order to demonstrate an early financial effect, efforts have been directed extensively at measuring cost reductions. The concept of “costs of quality” (COQ) has become increasingly important, with quality managers striving to drive down costs, as an indicator of TQM performance.

Traditional accounting practices are geared towards the production of financial accounts for

investors. Management accounting techniques, although meant for internal purposes, are subsets of the financial accounts, and reflect their focus[2]. If senior management are only looking at these figures, and if these figures do not show the gains made by TQM, then it is hardly surprising that they will not see the benefits, at least not in the short term. COQ are often not recognized by traditional costing and management accounting practices. As accounting systems are not geared towards yielding useful quality cost information, organizations often find it necessary to create cost collection systems over and above normal requirements, therefore adding to the initial costs.

In the longer term though, the benefits of TQM will show up on the bottom line, and there is strong evidence now that companies which have a long standing TQM culture demonstrate higher than average financial performance indicators. Between 1965 and 1985, Japan’s Deming Award winners showed higher increases in sales and profitability than the average. In the USA, the 20 highest scorers in the Baldrige Award applications of 1988-89 showed improvements in business performance indicators. A study by Letza *et al.*[3] based at the Bradford Management Centre in 1993 showed that over a five year period, over 70 per cent of the 29 European companies involved in the study showed far higher bottom-line figures than their industry sector means.

The European Foundation for Quality Management (EFQM) organizes the European Quality Awards. This is the first quality award to include business results in the assessment criteria (they have a 15 per cent weighting). The European TQM model is the basis of the assessment (Figure 1). Geoff Smith, working for the EFQM, has developed a mechanism for linking business results directly to this model. As TQM essentially involves customer focus, he

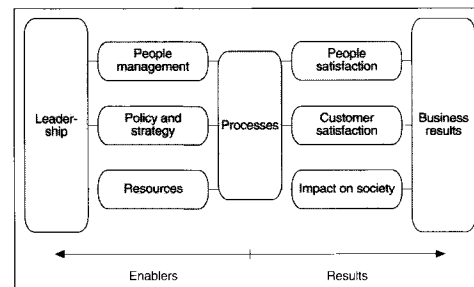


Figure 1.  
European TQM Model

highlights customer satisfaction as being the prime driver of TQM. It is cash from these customers that is the prime driver of business results, in the form of profits and cash flows.

### Costs of Quality (COQ)

Approaches towards costing quality have centred around failure costs and prevention and appraisal costs. The "costs of quality" model in Figure 2 is based on the work of Masser and Feigenbaum, after Juran. This approach has indicated typical costs of quality ranging from 5 per cent to 25 per cent of turnover, in Western companies, compared to 2.5 per cent to 4 per cent for the Japanese automotive industry.

There are, however, problems, with this model:

- categorization;
- the methodology looking at areas in isolation;
- only tangible costs being considered;
- the implication of a minimum COQ.

If one assumes that costs can be reduced through the improved efficiency as a result of experience, the so-called "learning curve effect", then another model can be drawn. Figure 3 shows the model contained in British Standard BS 6143.

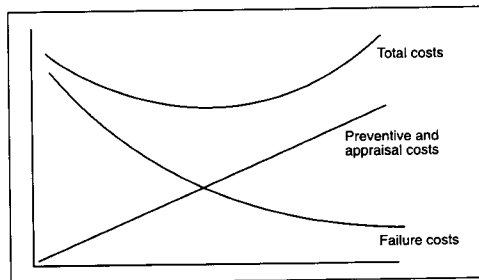


Figure 2.  
Costs of Quality

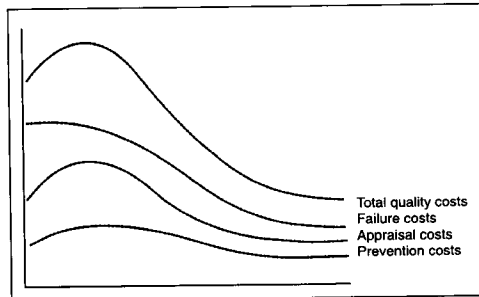


Figure 3.  
Costs of Quality - BS 6143

This model implies that total quality costs can be reduced over time. Potential figures quoted are as high as a two-thirds reduction in COQ. The problem now becomes one of identifying where the costs of quality lie. Crosby has distinguished between two types of COQs:

- (1) costs (price) of conformance (caused by the design of the process);
- (2) costs (price) of non-conformance (caused by the operation of that design).

The distinction is important as it focuses attention on processes which, according to Johnson and Kaplan[2], are the cause of costs.

Recently, several writers have extended Crosby's two-part cost of quality model. Porter and Rayner[4] developed a similar process cost model but presented in the form of a flowchart of the processes, which is useful in identifying key process steps and parameters. This model attaches costs of conformance and non-conformance to these processes. If costs of conformance are high, the process needs redesigning, while if costs of non-conformance are high, the process needs improving. It is important to note that this model focuses on processes, not products, in the assignment of costs.

### Activity-based Costing

Activity-based costing came to the fore in the late 1980s, following the publication of Johnson and Kaplan's book, *Relevance Lost; the Rise and Fall of Management Accounting*[2].

Conventional financial and management accounting methods have developed primarily as a result of corporate legislation in the 1930s, forcing companies to provide externally published financial accounts. While application of rigid rules is fair for financial accounts, management accounts are intended primarily as a decision-making tool for running the business and therefore require more flexibility. According to Kaplan[5] management accounts have tended to become a subset of the financial accounts, and reflect the external rather than the internal requirements of the company.

Traditional management costing systems are characterized by:

- absorption of production overheads (not selling or administration) into product costs for the purpose of stock valuation;
- use of labour hours or labour costs as a "convenient" overhead recovery base, regardless of the proportion of total costs labour actually is;

- use of blanket overhead recovery costs in the interests of “simplicity”.

In relation to decision making, this system has some basic flaws. The allocation of overheads to product costs for stock valuation is being driven purely by the external financial reporting process. Some selling and administration costs are obviously product related, but cannot be allocated as such because of these constraints. Increasingly labour costs are accounting for a smaller and smaller proportion of a company’s overall costs, as companies become more efficient and make use of new technologies. Blanket overhead recovery does not take into account actual usage, either by department, or by product.

Nowhere, in traditional systems, is there any acknowledgement of costs generated by customers.

This form of management accounting has, in its way, ensured that organizationally companies have developed and maintained their rigid departmental structures: production, sales and marketing, finance, research and development. Sales and marketing costs show as expenses, R&D costs tend to be sunk costs, etc.

By rejecting traditional costing methods, Kaplan[5] also rejects the conventional academic recommendation of marginal costing because:

- product strategy decisions are not short term, but have implications over three to five years, the period when many fixed costs become variable;
- the traditional split of fixed/variable costs is unrealistic in practice.

In activity-based costing, an attempt is made to track overheads to cost units (i.e. the units that generated that overhead cost) as accurately as possible. In essence, this is a return to the kind of costing methods used before the need for financial reports!

In order to track costs, the concept of the cost driver is central to ABC. Essentially, a cost driver is a unit measure of a particular overhead that can be assigned to a user of that overhead. Direct material and labour costs will be assigned to the product, as in cost accounting methods. For example, in attempting to allocate administration overheads to products, the cost driver may be the number of invoices generated for that product. Products generating the most invoices would therefore acquire the largest share of administration overhead.

Of course, there does not have to be one driver per overhead. There may be multiple drivers, and every organization will have its own relevant drivers. How accurate you want to be with your allocation is literally a function of the relevance and the number of drivers used.

A more accurate means of allocating overheads to products, means that product costs can now be more accurately assessed. ABC analysis often indicates that low volume products are substantially undercosted. This then leads to changes in product strategy. Frequently, companies adopting ABC find many unprofitable products that they can eliminate, and similarly profitable ones that have not been properly exploited, purely because the correct costs had not been appreciated.

It is common in conventional management accounting practice to base unit costs on budgeted capacity rather than actual (practical) capacity. This leads to products being overcosted and subsequently overpriced. If the result is fewer sales, then the same mechanism leads to further price increases and further falls in sales. ABC highlights excess capacity, because only *consumed* capacity is allocated via the cost drivers. This has important implications for management. By using ABC techniques in this way, there is now a measure of *excess* capacity. This takes away the focus on meeting budgets at all costs, and instead focuses on continuous improvement. It becomes no longer sufficient just to meet budget (measured by variance analysis), but to understand what resources must be supplied to meet requirements.

Product costing is not the only use of ABC. By finding appropriate drivers and cost units, overheads can be assigned to anything that uses them. It allows sales and marketing costs to be assigned, both to products and to customers. Traditional accounting techniques do not take into account the costs generated by customers, whereas ABC can and does. An organization concerned with customer focus might gain valuable insights into customer behaviour by using such a method.

Figure 4 shows an ABC model. In this model, costs are assigned to either products, customers or infrastructure. While ABC can allocate overheads

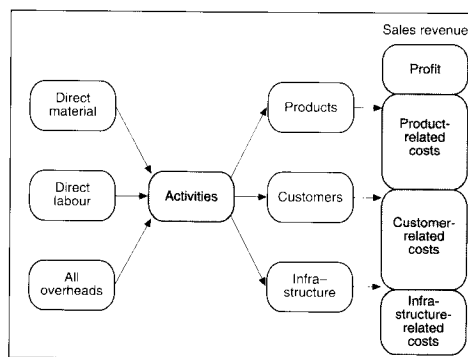


Figure 4.  
Activity-based Costing Model

more accurately, some costs will always be solely attributable to the functioning of the organization itself.

### Activity-based Management

It can be seen that cost drivers essentially measure activities. Whether it is invoice generation or spraying paint, it reflects a use of materials or resources. In every organization, resources are consumed by activities that are part of processes. It is therefore possible, using the appropriate cost drivers to develop a deeper understanding of the processes involved in an organization. This has led to the development of activity-based management (ABM) as an extension of ABC. With the appropriate activity database in place, activities and processes can be managed effectively. Figure 5 demonstrates a model for ABM. Performance measures come out of an analysis of activities, i.e. how well they are performed. By measuring activity and costs, ABM has in place a system to monitor continuous improvement, and manage the business from a process perspective, rather than a departmental one.

On switching to ABM, many companies that have always used traditional accounting methods, find out, for the first time, the actual costs involved in the activities that they are performing. The usefulness of this is often a surprise to people who have seen ABC as purely a product costing exercise. With ABM they have the ability to manage their business processes, making decisions based on accurate, process level information.

TQM has developed from the early days of Deming, Juran and Feigenbaum into a complete management system. Professor John Oakland at the European Centre for TQM at Bradford

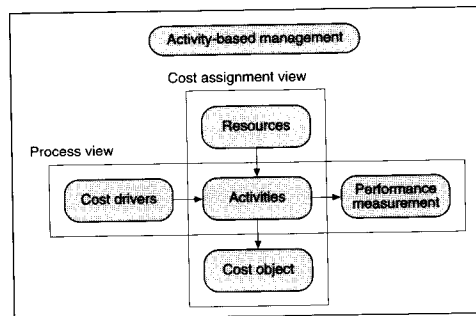


Figure 5.  
TQM and ABCM

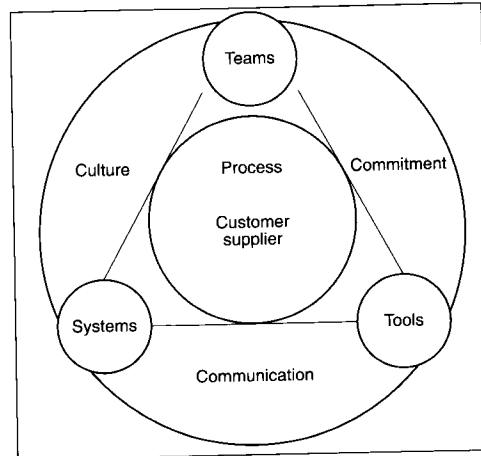


Figure 6.  
Model for TQM Implementation

Management Centre has developed a practical model for TQM implementation (Figure 6). At its core are processes.

This focus on processes has led to the process costing model in an attempt to measure accurately costs of quality, in order to assess the cost-effectiveness of TQM.

Traditional accounting methods focus on the profit and loss account, which in turn focuses on departments and departmental budgets. This gives rise to a basic dichotomy, whereby finances are focused according to departmental "silos", via budgets, yet TQM, its implementation, philosophy and ultimately measurement, is process oriented (Figure 7).

Activity-based cost management (ABCM), also focuses on processes by measuring activities, and ascribing costs to those activities. ABC can

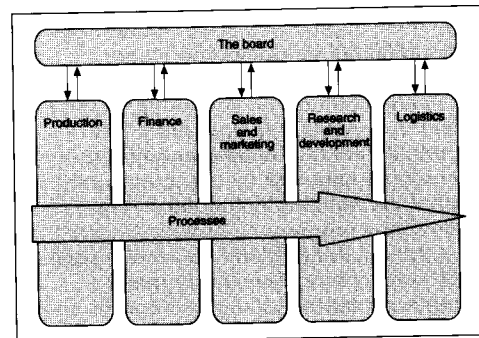


Figure 7.  
Silos versus Processes

supply cost of quality information, but can go further still. By describing costs as customer generated (using appropriate cost drivers), ABC can begin to look at quality costs at the customer level, so supplying more accurate COQ information (in this case, non-conformance costs). If TQM is to be a truly organization-wide discipline then a costing system built around processes will supply cost information (not just COQ) at the level at which the management structure is operating. By identifying costs more accurately, ABC can highlight those processes where improvement is being made, and so tangible benefits will appear in bottom-line results. The benefits of TQM will be visible to senior management earlier on.

ABC revolves around the identification of appropriate cost drivers. These can be as general or as individualistic as the organization requires. Some examples are: volume, introduction and assortment drivers. TQ organizations may develop a separate set of quality drivers, e.g. number of derivative designs, customer complaints, capability modifications. Whatever the requirements, a driver can be identified. The hunt for more accurate drivers can become a process of continuous improvement in itself, with the finance department taking on board TQM principles in a truly pan-organizational approach!

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**“A characteristic  
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A characteristic of TQM is the empowerment of employees. Through quality improvement teams (QIT), employees involved in a business process take charge of their own destinies and control their own continuous improvement programmes. A criticism often levelled at the QIT approach is that ideas do not get accepted by senior management. Ironically this is almost universally true in organizations that are “failing” to show benefits from their TQM programme. For employees to be truly empowered, management must provide them with the resources required. If they have accurate cost information, then improvement schemes can be properly costed. Ideas that can demonstrate a cost benefit stand a much better chance of being accepted by a management determined to show financial results. If accountants are involved in the QITs then more appropriate cost drivers could be identified in an ABC system. ABC would provide accurate cost

information based on activities at the process level.

TQM organizations all attempt to measure quality costs, and as conventional management accounting is not structured to provide this information, extra costing systems are being devised. Some of these are not compatible with ABC. Many TQM organizations have installed sophisticated MRPII systems, typically designed to handle material, labour and machine hours as overhead recovery bases, and these are not designed to handle multiple cost drivers. Companies who have taken this road already will be unlikely to take on board an ABC system. However, process costing is compatible with ABC.

ABM offers TQM an accurate management information system that will provide cost data at the business process level. Improvements in processes will become visible and tangible benefits will be seen at the crucial three- to five-year period, because ABC;

- is geared to the medium term;
- measures activities at the process level;
- provides accurate cost data;
- identifies customer generated costs;
- identifies excess capacity;
- focuses on continuous improvement;
- is flexible and customizable.

While not a panacea, ABC would appear to have a great deal to offer the TQM organization. By providing management with better quality information, it allows better quality decision making and brings the finance function firmly into the total quality culture.

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### References

1. Feigenbaum, “Total Quality Control”, *Harvard Business Review*, 1956, 3rd ed., 1991.
2. Johnson, H. and Kaplan, R.S., *Relevance Lost: the Rise and Fall of Management Accounting*, Harvard Business School Press, Boston, MA, 1987.
3. Letza, S., Zairi, M. and Oakland, J., “Does TQM Impact on Bottom Line Results?”, *The TQM Magazine*, Vol. 6 No. 1, 1994.
4. Porter, L.J. and Rayner, P., “Quality Costing for TQM”, *International Journal of Production Economics*, 1992.
5. Kaplan, R.S., “In Defence of Activity Based Cost Management”, *Management Accounting*, November 1992.

### Further Reading

- Bellis-Jones, R., "Active Management", *TQM Magazine*, August 1993.
- Bellis-Jones, R. and Develin, N., "Activity Based Cost Management", *Accountants Digest*, Spring 1992.
- BS 6143 – Parts 1 to 2, "Guide to the Economies of Quality", 1990-92.
- Cooper, R. *et al.*, "From ABC to ABM", *Management Accounting*, November 1992.
- Crombie, G., *TQM Magazine*, August 1993.
- Dale, B.G. and Plunkett, J.J., *Quality Costing*, Chapman and Hall, London, 1991.
- Dale, B.G. and Oakland, J.S., *Quality Improvement through Standards*, Stanley Thomas Ltd, 1991.
- Davies, P., "Financial Difficulties", *TQM Magazine*, August 1993.
- Deming, W., Edwards, *Out of the Crisis*, 1982.
- Dugdale, "Uses of Activity Based Costing", *Management Accounting*, October 1990.
- Editorial, "EFQM Viewpoint", *TQM Magazine*, August 1993.
- Hewins, M., "Accounting for Costs", *TQM Magazine*, August 1993.
- Jeeves, A., "Accounting for Quality", *TQM Magazine*, August 1993.
- Keys, D. and Reding, K.F., "SPC-What Management Accountants Need to Know", *Management Accounting*, January 1992.
- Steimer, T.E., "Activity Based Accounting for Total Quality", *Management Accounting*, October 1990.
- Turney, P. B. B., "Activity Based Management", *Management Accounting*, January 1992.
- Williams, M., "Linking the Results", *TQM Magazine*, August 1993.