

MANAGEMENT ACCOUNTING – PERFORMANCE EVALUATION

Ian Herbert analyses two “soft” management techniques used in manufacturing: quality management and just-in-time production.

In a traditional manufacturing environment, quality control was chiefly the responsibility of a separate department that was usually located (both physically and mentally) at the end of the production process, supplemented by roving inspectors. In addition, the initial output was checked after machine changeovers. Completed products were inspected and any rejects were reworked, sold as seconds or scrapped.

Usually, little effort was made to investigate and correct the root cause of quality problems. Because work-in-progress (WIP) cycles tended to be measured in weeks rather than days or even hours, it was difficult to identify exactly when, where and why the original defect had occurred. Although some companies also inspected incoming goods rigorously, less attention was paid to what happened in the middle. Monitoring the quality of production in too much detail was seen by workers as intrusive surveillance – a reaction to the scientific school of management.

Today, monitoring quality at every stage of production is something of a mantra in most manufacturing firms. In its widest sense, quality is taken to embrace the monitoring and improvement of every aspect of every activity. More narrowly, it means ensuring conformance to whatever specification has been agreed, the objective being zero tolerance. Leading firms now measure defect rates in parts per million. In the past, reject rates of five to ten per cent were not only common but accepted as inevitable.

Quality management is a broad term that includes a range of approaches such as *kaizen* (continuous improvement), quality

circles, Six Sigma and standards such as ISO9000. Each of these has distinct features, although there are also many similarities.

To appreciate the concept behind the quality revolution, it's useful to know the work of William Edwards Deming, one of the Americans who went to Japan after 1945 to help the country rebuild its industrial base. Deming developed an approach to quality management based on statistical analysis that sought to reduce variation from agreed specifications by tackling the root causes of quality problems. Building good quality in rather than inspecting bad quality out improves processes and ultimately reduces costs. Strangely, US and other western manufacturers saw little value in Deming's approach until it was too late for many of them.

Today, organisations that don't take quality seriously simply won't survive. But the implementation and maintenance of a sound quality system is not straightforward. It is time-consuming, expensive and requires serious commitment from everyone involved in the manufacturing process. This can be hard to achieve when there are other strategic imperatives. Students should be careful not to give the impression that they think a quality programme comes out of a box and instantly sorts out years of poor design and sloppy practices. It doesn't.

Just-in-time production (JIT) seeks to reduce the stock at each part of the production cycle to nil. Production starts only when an order is placed by a customer. The idea is the same throughout the rest of the production chain, creating a “demand pull” system. Each activity starts only when the activity in front has zero stock. This not only reduces stocks of WIP, but also – perhaps more important when there is no slack in the system – brings any production problems into immediate focus. Corrective action must be taken before any further work starts. Consequently, JIT is often seen as enforced problem-solving.

Another benefit of JIT is a reduction in the lead time of the overall manufacturing cycle – ie, between a customer's order and delivery – thereby increasing responsiveness to changes in consumer needs. Furthermore, improvements in quality management are usually required to guarantee consistency from the production process.

Because it is only the customer's order that triggers the manufacturing process, no production is made for general stock on a “just in case” basis. This avoids the traditional problem of producing stock in anticipation of demand that does not materialise.

The Dell computer company has adopted

JIT as one of its core values. Customers specify the PC they want from a list of options on the firm's web site, which is then produced and delivered. This reduces stock levels, the risk of obsolescence in a fast-moving sector and the need for market research. It means much less guesswork – and risk – for Dell.

JIT appears wonderfully simple and can deliver huge gains in efficiency and effectiveness, but it's not that straightforward. If it were, everyone would be doing it, but real life isn't like that. Let's get rid of the hyperbole so that you can demonstrate the balanced view that the examiners expect when they require you to “discuss” a topic.

First, bottlenecks can arise in most systems. If suppliers and trade unions know that you are only one widget away from total shutdown, they might be tempted to seek better terms. As manufacturing equipment is getting more sophisticated and expensive, keeping it running productively 24/7 needs sufficient WIP in front of the bottleneck machines to ride out any problems that might occur in earlier processes. The cost of

“The village blacksmith has been working on a JIT basis for centuries – it’s just that he didn’t know it”

stockholding is a trade-off against idle time (overhead under-absorption). Some of the large companies that boast of implementing JIT have been able to do so only because of their sheer size and bargaining power over smaller suppliers. This has allowed them to dictate that the suppliers must hold significant stocks, which can be called on as required.

Second, stocks are good for customers. Although having a product prepared to your exact specification in days is impressive, you probably don’t want to wait even that long; you want it now. You will probably be happy as long as there’s a reasonable range to choose from. You want someone to design it for you, not to have to do their job for them. You’re impatient and are in a hurry. In other words, you want one from stock.

Third, the biggest myth of JIT is that it’s new. Yes, the name and its application in large-scale manufacturing is relatively new, but think back to the village blacksmith: he’s been working on a JIT basis for centuries – it’s just that he didn’t know it. Also, think of those cafés that have signs up saying: “Food cooked to order. It may take a little longer, but it’ll taste better.” A JIT system that prevents the chef from having to throw uneaten food away is simple and brilliant – food is one thing we don’t want from a stockpile.

So quality management and JIT clearly have their pros and cons. What differentiates good managers – and good exam answers –

from bad ones is the ability to distinguish which features are relevant to the scenario at hand. Let’s look at some of the implications for a management accountant advising the board. First, before a decision to try a new approach is considered, you should analyse both the present situation and the potential scenario. What does bad quality cost? How far is the company away from benchmark standards in its industry? How much can it expect to save? Over what period? What other benefits might arise – for example, better customer relations through better quality – and how might a value be placed on these? But what are the costs of change? What are the risks? “What if” analysis might be helpful here. The payback from such initiatives can be protracted and capital appraisal techniques such as the discounted cash flow method may be appropriate.

Next, an implementation plan will be required, along with a detailed budget for the project itself. Adjustments to existing budgets may be needed. Under a JIT regime cash will be freed up as existing stocks are reduced, but the costs of transport and handling might rise as the economies of batching production disappear. This may have implications for the cost structure. As the implementation proceeds, the planned costs and savings will need to be monitored month by month. The last step, after the project has had time to settle down, is to conduct a more reflective

review of the whole process – ie, a post-implementation audit. Was it really as good an idea as we thought? What lessons can we learn for the future?

A further aspect to consider is that quality management and JIT are as much a philosophy of working life as standalone techniques. With them comes an expectation that all parts of the organisation review how they do things and strive to improve. You will be expected to practise what you preach. That might entail producing your monthly reports a couple of days after the period end rather than a couple of weeks. Quality improvements in accounting might involve reducing errors in transaction processing or reporting. Perhaps you should even treat the users of your accounting information as internal customers and survey them periodically to ensure that they are happy with the service you’re providing.

Ian Herbert is a lecturer in accounting and financial management at Loughborough University Business School.

Exam practice

Try the following question to test your understanding. The answer is in the next issue of CIMA’s student e-magazine, *Velocity* (www.cimaglobal.com/velocity).

Sherwin is a company that makes a range of pet accessories. It has recently modernised its production facilities, replacing direct labour with machines. Although there were teething problems, the new machines have performed well and to the manufacturer’s specifications. But Sherwin’s customers are now complaining about poor product quality and late deliveries. The MD is particularly mystified at the second problem, since he had authorised a significant increase in the level of work-in-progress inventory to keep the machines at full capacity. At a recent conference he heard about total quality management (TQM) and just-in-time production (JIT). He wonders whether these techniques might be the answer to Sherwin’s two problems.

As the firm’s management accountant, you’re required to advise him on the scope for TQM and JIT to solve these problems.

P1 further reading

M Walton, *The Deming Management Method*, Mercury Business Books, 1992.

S Holzner, *How Dell Does It*, McGraw-Hill Higher Education, 2006.

J Cruikshank, *The Apple Way*, McGraw-Hill, 2005.

J Evans and W Lindsay, *The Management and Control of Quality* (sixth edition) South-Western College Publishing, 2005.

B Scarlett, *Management Accounting – Performance Evaluation CIMA Learning System* (2008 edition), CIMA Publishing, 2007.