LEAN ACCOUNTING

Ross Maynard explains how lean accounting principles could help you to revolutionise standard costing by improving the "flow" in your organisation.

In a high-variability, multi-product environment, there is no such thing as one standard product cost. The cost of the product is related to the flow through the process. A number of factors affect the speed and efficiency of this flow and, therefore, the cost. If you control the flow, you control the cost. And improving flow through the process improves profitability. An added benefit is that improving the flow can also create extra capacity for profitable production.

Flow through the process (whether in manufacturing or in service delivery) is impeded by a number of factors:

- Poor quality. This is measured by first-pass yield – the percentage of throughput that is processed correctly the first time (also called first time through or failed parts per million).
- Scrap. Time spent on production or services that are scrapped because of quality problems is time wasted.
- Rework. Time spent correcting errors and reworking is time wasted (and expensive).
- Product mix. Some varieties of product may take more processing time than others.
- Downtime owing to breakdowns, stoppages for maintenance etc.
- Lack of skills owing to poor training, absence, recruitment difficulties etc.
- Poor-quality raw materials or components.
- Lack of raw materials or components.

Since these factors impede flow, they increase cost. Reducing these obstructions will, therefore, improve flow and reduce cost. Improving first-pass yield and machine availability dramatically improves flow and so has a significant impact on cost.

Of course, it's no use merely being able to manufacture more stock; you also need customer demand. So what can management accountants do? I believe that we have four fundamental roles in the modern multi-product business:

Role 1: measure flow through the process.

In high-variability, multi-product organisations, profitability is maximised when the rate of flow through the process is maximised, not when machine or labour utilisation is maximised. This means that we need to get to grips with flow. We need to provide information that measures it and promote behaviour that improves it.

Traditional accountancy measures rarely focus on flow through the process. Fortunately, operational managers use these measures and we need to work with them to provide information that highlights flow and its impact on profitability. Measures of flow that are widely used in organisations include:

- Production by the hour – ie, measuring flow through the process in real time.
- Work in progress versus standard work in progress. If work is building up compared with the standard, then flow is interrupted.
- First-pass yield rates.
- Scrap and rework rates.
- Operational equipment effectiveness – a measure of equipment reliability, quality and efficiency.
- Dock-to-dock time – ie, the total time a component takes to move through the process. In effect, this is raw material stock days plus work-in-progress stock days plus finished goods stock days. It is also an indicator of cash tied up in stock.
- Accounts receivable days – ie, the amount of cash tied up in debtors.
- On-time delivery – ie, how often you meet customer delivery requests.

Management accountants should work with their operational colleagues to ensure that the measures are defined correctly and the data is collected accurately. Of course, there is no point delivering such data five days after the period end. Much of this data can be collected daily for operations managers and reported to more senior managers weekly (*see role 3, opposite*).

Role 2: understand the capacity of the process.

Improving the flow through the process (providing that this serves to meet customer demand, not to build stock) improves profitability because:

- A faster flow through the production or service delivery process reduces the need for stock at all stages and so reduces stock-holding costs, as well as the costs of obsolescence and loss. It also gives a significant boost to cash flow.
- A faster flow also means greater responsiveness to customers. This is a significant competitive advantage that often commands a price premium. Would you choose the service provider that can meet your needs in two weeks or the one that takes eight weeks?
- A faster flow also creates flexibility to meet specific customer requirements with a short turnaround. There can be significant potential profits if you can customise to customer requirements quickly.
- Improving the flow reduces waste. Scrap, rework, machinery breakdowns, poor skills training and so on all cost the company money in terms of lost production and increased costs. Improving the flow and minimising costly interruptions creates extra capacity that can be sold. This extra capacity is available at marginal cost because you are already paying people wages, covering depreciation and maintenance on machinery and incurring overheads. This assumes that you can sell the extra capacity. But, if you are also flexible and can offer a fast response to customer requirements, you should have an advantage over competitors.

So, by measuring and understanding the available capacity in the process you can create chances to generate extra revenue. Once again, this role requires management accountants and their operational colleagues to work together. Tools exist for calculating capacity and this can be done weekly or monthly. You can then provide decision support to show the real impact of creating and utilising capacity on profitability.

Role 3: provide financial information that is timely and relevant.

Lean management is an example of a time-based business strategy that continuously aims to improve speed through the production and service delivery processes. In any such strategy, getting management accounts five days after the period end does little to support timely and effective decision-making. In such an environment we need to provide financial data in real time. In practice, this means weekly – on the Monday morning of the following week.

To achieve this, we need to simplify the accounts system radically. Standard costing provides no value to this process and should, therefore, be abandoned. We don't need (or want) overhead allocations or standard costs. Neither do we want (as far as possible) accruals, stock adjustments, works orders, purchase orders or inventory tracking.

- Contribution costing should replace absorption costing.
- If we manage the flow through the process rather than individual product costs, we don't need works orders.
- Gathering data at the process (or value stream) level, rather than at the individual steps within it, means we can reduce the number of cost centres and cost codes.
- If stock is low and under control, we don't need to track stock on the system.
- Supplier partnerships and long-term contracts minimise the need for purchase orders.
- If you are interested in real costs in real time, you no longer need many accruals and other adjustments.

This is a snapshot of a fairly challenging transition, but it demonstrates the way in which management accountants need to start relating financial data to flow.

In a lean management environment, the production or service delivery process for a product or service category is called a value stream. There are other ways of organising value streams (including by customer), but the most common is to organise them by process. The value-stream (or process) manager has P&L responsibility (plus relevant assets), so we must present management accounts in a form that supports decision-making and management by that individual. This means presenting financial data on a contribution costing basis, without allocating overheads. But there are some differences between what is called value-stream management accounting and contribution costing as it is often taught. In value-stream management accounting:

- The revenue reported is the actual value of production delivered to customers in the period. The value of stock produced is ignored – we don't want to encourage the production of inventory.
- Material cost is the actual cost of materials delivered to the value stream or production process in the period, whether it is used in production or not. Again, we should discourage stock-holding and bulk buying and encourage just-in-time deliveries instead. There are times when bulk buying is necessary – eg, steel stock). In this format such activity is visible and, therefore, easy explained.
- Labour costs are those actually incurred in the period, including overtime and temporary staff costs. Labour is seen as a fixed cost in the short term.
- Costs directly attributable to the value stream or process are assigned to the value stream or process.
- In general terms, we do not make accruals or other adjustments. We are interested in showing costs as they arise to stimulate improvement. Value-stream management accounting is not about being fair (spreading costs evenly across periods); it is about encouraging operational behaviour that smooths fluctuations and so stabilises and improves flow. Only in special circumstances will we vary from this rule.
- We assign only costs that can be managed in the value stream. We do not allocate or apportion costs, since they cannot be managed by the operational manager. We do not apportion indirect overheads to the process. There are three possible exceptions to this rule. First, depreciation on equipment in the value stream is allocated, since this can support decision-making. Depreciation on capital items not in the value stream or process is not apportioned. Second, a proportion of facility costs is apportioned to the value stream in a way that supports behaviour to improve flow. Third, if a value stream or process takes up half of the space in a facility, then only half of the facility costs will be apportioned to the process. This encourages operational managers to reduce the amount of space they occupy, freeing up space for other profitable uses – eg, new products. Energy and water use in the value stream should ideally be metered. Where this is not possible, an allocation based on consumption in the value stream is acceptable. Again, there is no apportionment of utility costs not in the value stream.

Taken together, this information yields a value-stream (or process) contribution. Making this available every week supports operational managers because it will show the impact of improvements in real time and enable decisions to be analysed and taken in a timely and effective manner.

> “Getting management accounts five days after the period end does little to support decision-making”

Role 4: be active in strategic decision-making and continuous improvement. The previous three roles combine to transform the management accountant from backward-looking bean-counter to forward-looking provider of strategic decision support. The data that management accountants provide is used to drive operations every day. Management accountants should also engage with cross-functional teams in regular improvement activities. We provide information that forms the core management tool of the business. It is forward-looking and focuses on the importance of improving flow.

There are many tools that support these roles for management accountants. Two issues in particular are worth mentioning:

- How do we value stock without standard costs? Improving the flow means that we greatly reduce the level of stock held by the organisation. As a consequence, the value of stock becomes much less important on the balance sheet. There are a variety of simple methods we can use to value year-end stock.
- What about product costing? The price of a product in the marketplace bears no relation to its cost – the price is set by the market. Standard costing should, therefore, have no place in product costing. Standard costs are backward-looking and should not be used in decision-making, because they contain fixed costs and sunk cost. We should base pricing on value to the customer. There are several tools that we can use to do this, including target costing. There are tools for analysing the relative costs of different products (or product variations) and we do not need to calculate standard costs on an ongoing basis.

Value stream A

	Week 32	Week 33	Week 34	Week 35
Performance measures				
Units produced	68,511	73,719	55,196	63,752
Scrap (£)	8,211	5,000	10,353	6,646
Operational equipment effectiveness	74%	80%	70%	73%
Schedule adherence	89.80%	89.20%	90%	89.60%
Lead time – dock-to-dock days	19.25	18.10	22.20	20.30
Parts per hour	350	377	282	366
Capacity (at bottleneck)				
Productive capacity	67.37%	65.72%	51.26%	56.91%
Non-productive capacity	28.51%	25.98%	30.43%	27.84%
Available capacity	4.12%	8.30%	18.32%	15.25%
Financial data (weekly)				
Revenue (£)	342,910	473,500	449,056	359,258
Material cost (£)	198,765	201,102	243,234	80,836
Labour cost (£)	37,987	37,987	37,987	37,987
Other direct costs (£)	5,835	5,835	5,835	5,835
Value stream profit for week (£)	100,324	228,577	162,001	234,601
Value stream return on sales	29.3%	48.3%	36.1%	65.3%
Average value stream cost per unit (£)	3.54	3.32	5.20	1.96

Consider an illustration, using real data from a UK firm, of the sort of weekly reporting that management accountants in a high-variability, multi-product organisation might produce (*see panel, above*). As a key player in the decision-support role, how would you lead discussions about the data? What would you focus on to explain the average value stream cost per unit in week 34, compared with that in week 35? It's not about fixing blame; it's about using data and trends to stimulate behaviour that improves the flow.

In this process, the management accountant becomes a key player in the team, driving the business to improve. The era of the back-office bean-counter is gone; our new role has a real impact on decisions, performance and profitability. This is a marvellous opportunity.

Ross Maynard FCMA (rmaynard@bmaeurope.com) is a senior consultant at BMA Europe. He has implemented this approach with clients across Europe.

Further reading

1 S Garner, *The Evolution of Cost Accounting to 1925*, University of Alabama Press, 1954. **2** J Cunningham and O Fiume, *Real Numbers: Management Accounting in a Lean Organization*, Managing Times Press, 2004. **3** B Maskell and B Baggaley, *Practical Lean Accounting: A Proven System for Measuring and Managing the Lean Enterprise*, Productivity Press, 2005. **4** B Baggaley, N Katko, B Maskell and D Paino, *The Lean Business Management System*, BMA Press, 2007 (available from www.maskell.com). **5** B Emiliani, *Better Thinking, Better Results*, Center for Lean Business Management, 2007. **6** J Solomon, *Who's Counting: A Lean Accounting Business Novel*, WCM Associates 2003. **7** T Ohno, *Toyota Production System: Beyond Large-Scale Production*, Productivity Press, 1988. **8** B Emiliani, *Real Lean* (volumes 1 and 2), Center for Lean Business Management, 2007.