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What's On?

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Conducted by IPMI Business School.

August to November, 2008, Manila, Philippines
14th CMA Program on Strategic Cost Management and Strategic Business Analysis. Conducted by www.cmaphilippines.com

August 2008, Mumbai, India
10th CMA Program on Strategic Cost Management and Strategic Business Analysis. Conducted by www.cmaindia.net

October to November 2008, Toronto, Canada
Strategic Cost Management and Strategic Business Analysis program. Conducted by www.cmaglobal.com

November 2008, Dubai, U.A.E.
3rd CMA Program on Strategic Cost Management and Strategic Business Analysis. Conducted by the Wisdom Institute.
www.cmadubai.com

December 2008, Kuala Lumpur, Malaysia
7th CMA Program on Strategic Cost Management and Strategic Business Analysis
Conducted by Multi-Media College.

December 6 - 16 2008, Shanghai, China
Proposed CMA Program, China

On Target

Newsletter of the Institute of Certified Management Accountants

Aug/Sept 08 Volume 12 Issue 1

Inside this issue:

Productivity Accounting

John Parsons & Alan Abrahams

Introduction
Until fairly recently, the measurement of productivity was largely in the hands of either economists or industrial engineers – the former interested in trends for major economic sectors and the latter in measurement at job level.

Similarly, measures of productivity and profitability have often been seen as rivals vying for executive attention. Whereas productivity measures are based on quantities (of products and resources), profit is based on money. An understanding of the relationship between these performance variables is implicit in productivity accounting systems since they directly link productivity and profitability.

As this holistic nature of productivity becomes better understood and because of the strong bond between productivity and profits, it is perhaps natural that responsibility for its measurement will shift to accountants – especially management accountants.

How does productivity accounting work?
Productivity accounting is the means whereby a monetary value can be attached to productivity change. Its close links to accounting systems make the methodology robust, unambiguous and rigorous. The approach produces a total productivity index whilst simultaneously showing directly, in dollar terms, the contribution that productivity and prices are making to the financial position of the organisation (however defined).

The concept rests on isolating the quantity and price components of dollar value changes for both revenues and costs. The approach is explained by the diagram below (Figure 1).

Figure 1: Sources of Profit Change

The centre column shows the usual relationship between profit, revenue and cost. Profit changes are driven by changes in revenue and changes in cost. The top row indicates that revenue changes are derived from changes in product quantities and/or prices whilst the bottom row shows that cost changes are driven by changes in resource quantities and/or prices. Resource prices would include material prices, wage rates, energy tariffs, interest rates and replacement prices for capital equipment.

The left column links changes in product quantities with changes in resource quantities and is the measure of productivity change. Measured in this way, it becomes possible to show how productivity influences profits in financial terms.

The right column links the product and resource prices charged by and to the business respectively. It creates a relationship called price recovery that determines the extent to which resource price increases (inflation) are recovered through changes in the product selling price. When product prices increase at a faster rate than resource prices, the result is price over-recovery or inflationary pricing.

Instead of the conventional profit analysis represented by the centre column, it becomes possible to analyse profit change in terms of productivity and price recovery, as represented by the centre row. *Since profit growth supported by productivity growth is sustainable whilst that resulting from price over-recovery is not, it is crucial to be able to make the distinction when reporting on the financial condition of the business.*

The analysis can be further refined by showing separately the contribution to productivity change made by spreading non-variable costs (such as those associated with capital) over a larger or smaller product volume (capacity utilisation) from that made by management-induced resource allocation decisions. The measures thus derived are shown in Figure 2.

CMA the gold standard

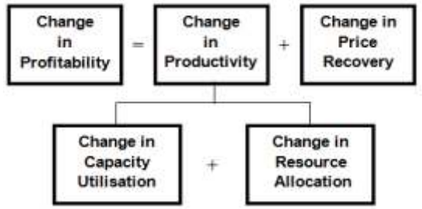

Figure 2: Performance Measures

Resources	All values are in $000s					
	Profit	Contribution from				
		Productivity %	Productivity variance	Capacity Utilisation	Resource allocation	Price recovery
	A	=	B	+	E	C
			B =	D +		
Materials	47	3.5	35	0	35	12
Labour	(37)	(1.7)	(8)	5	(13)	(29)
Energy	(10)	11.3	7	3	4	(17)
Capital	2	(6.4)	(14)	1	(15)	16
Total	**2**	**1.5**	**20**	**9**	**11**	**(18)**

Figure 3: Productivity Accounting – Profit Report

How are the results portrayed and what do they tell us?
Consider the sample report shown in Figure 3. The results depicted in Figure 3 explain the changed profit position over two financial periods. Overall profits have improved by $2,000 as indicated in the total line of column A. Columns B and C show that this improvement is a consequence of a 1.5% gain in total productivity which contributed $20,000, and a price under-recovery which cost the organisation $18,000. Furthermore, the $20,000 contribution from productivity growth (the amount of new wealth created) was derived from gains associated with spreading the non-variable expenses over higher product volumes ($9,000 – column D) together with the net benefits derived from management-driven resource allocation decisions ($11,000 – column E).

Column A displays the contribution each resource element (materials, labour, energy and, notably, capital) is making to the $2,000 profit improvement. Each dollar variance is broken down to reflect the contributions of productivity (both capacity utilisation and resource allocation effects) and price recovery. For example, labour productivity declined by 1.7% because of unfavourable resource allocation decisions whilst wage rates outstripped selling prices. Together this caused the labour cost ratio (labour as a percentage of sales) to deteriorate, reducing profits by $37,000!

Conclusion
The purpose of productivity and performance measurement is to facilitate improvement. Given the resource substitution opportunities that exist in modern business, it has become increasingly desirable to develop total productivity measures. However, productivity growth must ultimately impact favourably on the 'bottom line' financial position of the business, otherwise there is no incentive to support productivity improvement efforts. It seems logical, then, to directly link productivity measures to the accounting results.

Productivity accounting can open up whole new vistas for management and financial accounting personnel. It offers unprecedented opportunities to 'get behind the numbers' in strategic ways. Productivity and profitability, although only two of the corporate key performance indicators of success, are nevertheless the ones most analysts are likely to look at first. And there is nothing to prevent productivity, price recovery and profitability all appearing on the corporate scorecard.

John Parsons (ra.australia@bigpond.com) is Principal of Resource Alternatives Australia and National Executive: Business Strategy with the Australian Productivity Council.

Alan Abrahams (alan.abrahams@objectconsulting.com.au) is Supervising Consultant with Object Consulting.

Carbon Cost Accounting

Snapshot Series!

Snapshot Series 6
(continuing a discussion on a theme)

Carbon cost analysis is a subset of the push towards 'environmental cost accounting' that highlights the cost impacts 'beyond' those related to a specific cost object such as a product. Let us take a product such as a computer printer as an example. Typical environmental costs

Raw Material: Raw material environmental costs are simply the cost of the raw materials such as plastics, cartridges and steel in the waste. Every time a raw material is used and does not become a product, it becomes a waste. Even when such material become saleable products, on obsolescence of the product it goes into landfills as waste.

Labour: Prior to sale, the typical labour environmental costs would be the labour component of an off-specification product that becomes waste. Post sale, the labour costs that are required for re-cycling of parts is an environmental related cost.

Overhead: Utility costs, such as water and energy, are also often overlooked in determining the true cost of waste generation, both before and after a sale. These costs are a significant item in CO_2 emissions management.

Waste Management: The most obvious environmental expenses are the treatment and disposal costs of waste generated in the production process. Other waste management costs may include the expenses to collect samples, paper work, permit fees, consulting fees, and potentially fines for violations. The flip side of the hidden costs and impacts of waste generation is the hidden benefits resulting from actions taken to improve the environmental performance of a particular facility.

Recycling: This is a form of waste management at the obsolescence end of the product life cycle. This requires a three pronged approach: (1) the opportunity cost calculation (including the environmental impacts) of recycling components of existing hardware vis-à-vis using new components (2) Locking in recycling cost efficiencies at the design stage of new hardware (3) using the cost-benefit the analyses of the first two stages to influence Government policy on tax credits etc. for undertaking such environmentally sustainable programs. The U.S. Environmental Protection Agency (EPA) has an Environmental Accounting Project which encourages business to understand the full spectrum of their environmental costs and integrate these costs into decision-making.

There are often conflicts between the different cost categories. A study by CNW Marketing Research says that the total energy cost used in manufacturing, driving and recycling a Hybrid Toyota Toyota Prius is higher than that of most conventionally powered vehicles. The two-year study (claimed to have been independently funded) included factors such as:

- how many years it took to develop the vehicles
- how the material used was processed and how far these had to travel to get to manufacturing stage
- how far auto workers travelled, and whether or not they used public transportation
- the energy used in manufacturing
- the percentage of materials that can be effectively recycled the percentage of labour produced by robots versus humans
- variable estimated lifetime of components
- cost of fuel used over an estimated lifetime of 100,000 miles
- expected parts that would need to be repaired

This study showed that hybrid cars, whilst clearly using less fossil fuel to run, are environmentally more expensive to manufacture and to re-cycle than conventional cars. r example, the 'whole-of-life costs' for a Hummer H3 (placed number 30 overall) was A$1.8126 per Km, whilst the Toyota Prius Hybrid (placed number 24 overall) was A$3.0675 per Km. The least cost car in the study was the Jeep Wrangler (A$0.5743 per Km) and the highest was the Mercedes Benz Maybach (at number 96) with a cost of A$10.9416 per Km.

In undertaking a life-cycle costing exercise using carbon allowance costs, the issue of transaction costing vs. opportunity costing needs to be recognised. Some studies may take an opportunity cost approach and determine that the freely allocated allowances are worth the same as purchased allowances. Others make take a more transactional 'environmental compliance approach' and treat as a 'hard cost' only the cost of purchased allowances over the year.

Another example of lifecycle carbon cost accounting was in Australia, where the power company, Origin Energy, began changing its environmental practices when it audited the lifecycle of its products, from production to consumption, to discover it contributed about 30 million tonnes of carbon dioxide to the environment - about 8 per cent of Australia's total emissions. Since undertaking the audit, Origin has invested $20 million in solar energy, spent an extra $500,000 converting to sustainable power for its own use, and signed up 12 per cent of its customers to a "green-power" alternative.

Companies that start managing for environmental efficiency will also automatically cut costs and boost revenue. There is a view developing in some businesses that there is a direct measurable correlation between environmental efficiency and economic results. For example, Westpac, one of Australia's large banks, sees carbon costing no longer seen as an "add on" but central to its operations. They claim that the reduction of emissions at the Bank had significantly boosted its bottom line.

In the next issue of On Target: Carbon Financial Accounting

Member Profile: Professor Garry Marchant

Professor Garry Marchant, co-editor of the Institute's Journal of applied Management Accounting Research (JAMAR) has recently been appointed Deputy Vice-Chancellor and Provost of Bond University

Professor Garry Marchant, CMA, holds a BCom (Hons) from the University of New South Wales and an AM PhD from the University of Michigan. He was formerly the Dean of the Faculty of Business, Technology and Sustainable Development at Bond University. Prior to his affiliation with Bond University he was the Deputy Dean of the Faculty of Economics and Commerce at the University of Melbourne. He has also been on the faculties of the University of Connecticut, the European Institute of Business Administration (INSEAD), the University of Texas at Austin and the University of New South Wales in Sydney, Australia. As well Professor Marchant has also held positions with the Reserve Bank of Australia and Woolworth's (Australia) Ltd. His expertise lies within the areas of performance measurement and evaluation, strategy implementation, cost management and the use of accounting information for strategic decision making.

Professor Marchant conducts research and consults on performance measurement and evaluation, strategy implementation, cost management and the use of accounting information for strategic decision making. He has been a KPMG Research Fellow and the recipient of a KPMG Research Grant and is currently the recipient of both an ARC Discovery and an ARC Linkage grant. Research currently in process investigates the impact of planning, evaluation and control systems on organisational learning, analyses the impact of implementing a balanced performance measurement system on strategic decision making, and examines the process of aligning performance management systems. Professor Marchant is widely published including articles that have appeared in the Accounting Review, the Journal of Accounting Research, Behavioural Research in Accounting, Organisational Behaviour and Human Decision Processes, Auditing: A Journal of Practice and Theory, Journal of the American Tax Association, Advances in Taxation and Psychological Reports. The ICMA congratulates Professor Marchant on his excellent achievements.

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