Chapter 3

Historical overview

To understand the role of management accounting today, it is important to understand its history. Therefore a brief overview of the historical developments in management accounting practice from the nineteenth century to the present day is given. The impact of the changing management accounting practice on the teaching of management accounting will be addressed in the last part of the chapter.

3.1 The evolution of management accounting systems

Johnson and Kaplan (1987) state that the origins of modern management accounting can be traced to the emergence of managed, hierarchical enterprises in the early nineteenth century. Prior to this, virtually all transactions occurred between an owner-entrepreneur and individuals (such as raw materials suppliers, labour paid by piecework and customers) who were not part of the organisation. All transactions occurred in the market, and the owner could easily measure the success of each order by comparing the cash collected from customers with the cash paid out to the suppliers of production inputs. The double-entry bookkeeping system recorded money owing and owed, but did not act as an aid to decision-making and control.

The Industrial Revolution in the early nineteenth century resulted in the emergence of a factory system that dramatically changed the production process (Ashton, 2000: 76). Instead of entrepreneurs making contracts with workers who made goods in their

own homes it became more efficient to invest in capital-intensive processes and hire workers on a long-term basis to perform multi-stage production processes within a centralised workplace.

The emergence of the factory system created a new demand for accounting information. Market information, which had automatically provided details of materials and piecework labour costs incurred in meeting each customer's order, was no longer available. This created a need for cost accounting information to replace market information. In particular, information was required to determine the cost of the internal operations and also to measure the efficiency of converting materials leading to the finished product (Parker, 2002). The factories were frequently located a considerable distance form the head office of the owners, and an information system was required to judge the efficiency of the managers and workers at the factory. Thus, for a textile factory internal measures were developed such as cost per hour or cost per pound produced for each process and each worker.

Johnson and Kaplan (1987) suggest that, notwithstanding the impact of the Industrial Revolution, the emergence and rapid growth of railways in the mid-nineteenth century was *the* major driving force in the development of management accounting systems. New measures such as cost per ton-mile, cost per passenger mile and the ratio of operating expenses to revenues were created and reported on a segmental and regional basis. Many of the innovative management accounting measures developed by railway companies were subsequently absorbed and developed by other business sectors. For example, the large retail store chains such as Woolworths that developed in the late nineteenth century also needed measures to assess the efficiency of internal

operations. Measures such as gross profits and stock turnover ratios to measure the profitability and efficiency of the different departments, were adopted and extended by these retailers.

Johnson and Kaplan (1987) conclude that management accounting systems evolved to motivate and evaluate the efficiency of internal processes and not to measure the overall profit of the organisation. A separate financial accounting system,which will be discussed in section 3.4, and which operated independently of the management accounting system, recorded transactions for preparing annual financial statements for the owners and creditors of the firm.

In sections 3.2 to 3.5 various eras that had a definite impact on the development of management accounting will be discussed, including their influence on management accounting literature and teaching. Section 3.6 will be devoted to a discussion of educational developments with regard to management accounting, while section 3.7 will provide an overview on some management accounting textbooks and their influence on the teaching of management accounting. Sections 3.8 to 3.10 attempt to analyse current developments in management accounting and management accounting education.

3.2 The scientific management era

Further advances in management accounting were associated with the scientific management involvement. The scientific management engineers concentrated on improving the efficiency of the production process by simplifying and standardising the operations. Labour and material quantity standards based on the "one best way" of performing operations were developed and used to plan the flow of work and control operations. At about the same time as scientific managers were refining their techniques for determining standard, articles advocating the use of standards for cost control were published (Longmuir, 1902; Garry, 1903; Whitmore, 1908). According to Solomons (1968), it was G. Charter Harrison who, in 1911, designed and installed the first standard costing systems known to exist. In 1918 Harrison published the first set of equations for the analysis of cost variances. Much of Harrison's work is contained in today's literature on standard costing.

One other pioneer of standard costing is worthy of mention. In a series of articles in the Engineering Magazine of 1908 and 1909, Harrington Emerson advocated the development of accounting information systems specifically directed towards the achievement of efficiency objectives. Emerson was possibly the first writer to stress that information on standards permits managers to differentiate variances that are due to controllable conditions and variances that are caused by conditions beyond management's control. This idea is contained in much of today's literature on responsibility accounting. Thus, by 1920, sophisticated systems to record and analyse variances from standard had been implemented and articulated in accounting literature.

3.3 The growth of diversified organisations

In the early decades of the twentieth century a merger wave in the USA resulted in the emergence of giant vertically integrated and multi-divisional organisations. These multi-activity firms developed a centralised unitary organisational structure where the firm's operations were broken down into separate divisions, each with highly specialised activities. Its own manager ran each division, and the role of top management was to coordinate the diverse activities, direct strategy and decide on the most profitable allocation of capital to a variety of different activities. New management accounting techniques were devised to support these multi-activity, diversified organisations (Russell and Kulesza, 2000). Budgetary planning and control systems were developed to ensure that the diverse activities of different divisions were in harmony with overall corporate goals. In addition, a measure of return on investment (ROI) was devised to measure the success of each division and the entire organisation. Top management used the ROI measure to focus on the productivity of capital and to help them allocate capital to the most profitable divisions.

The diversity of product markets and the scale and complexity of the production processes within these new multi-activity firms created enormous information processing problems. It made it extremely difficult for corporate top management to function efficiently and effectively in all the markets served by their organisations (Russell and Kulesza, 2000). The solution to this problem was further decentralisation and the creation of investment centers. Most operational and investment decisions were delegated to divisional managers, and corporate top

management concentrated on coordinating, motivating and evaluating the performance of divisional managers. The ROI measure played a vital role in making it possible for centralised organisational structures to function effectively, since it enabled central management to delegate to divisional managers the responsibility for using capital efficiently. Attainment of ROI targets also became the basis for promotion within the organisation and, in some cases, dismissal of managers who failed to achieve a satisfactory ROI. The effect of interdependence and pricing of transfers of intermediate output between divisions also had to be considered as these factors could distort the ROI measure. Systems of transfer prices were subsequently devised that sought to provide a fair basis for allocating profits between divisions (Boer, 2000).

3.4 The dominance of financial reporting

According to Johnson and Kaplan (1987), most of the management accounting practices used today had been developed by 1925, and for the next 60 years there was a slow-down, or even a halt, in management accounting innovation. They argue that this stagnation can be attributed partly to the demand for product cost information for financial accounting reports. The separation of ownership and management of organisations created the need for the owners of the business to monitor the effective stewardship of their investment by the management. This need led to the development of financial accounting, which generated a published report for investors and creditors summarising the financial position of the company. Statutory obligations were established requiring companies to publish audited annual financial statements. In addition, there was a requirement for these published statements to

conform to a set of rules known as Generally Accepted Accounting Principles (GAAP), which were developed by regulators. These rules required that inventories be valued on the basis of historical manufacturing costs, which implied that non-manufacturing costs were not allocated to products, since GAAP procedures classified them as period costs and not product costs, although non-manufacturing costs may be important for decision-making (Drury, 2000).

The preparation of published financial accounting statements required that costs be allocated between cost of goods sold and inventories. Cost accounting emerged to meet this requirement. Simple procedures were established to allocate costs to products that were objective and verifiable. The emphasis was on the allocation of costs to products rather than accurately measuring resources consumed. Individual product costs could be inaccurate as an estimate of resources consumed by each product, but still provide information that was sufficiently accurate for inventory valuation and computing the cost of goods sold at the aggregate level reported in the financial accounting statements (Boer, 2000; Parker, 2002).

Johnson and Kaplan (1987) argue that the product costs derived from the cost accounting system were used for management accounting purposes. They conclude that managers did not have to yield the design of management accounting systems to financial accountants and auditors. Separate systems could have been maintained for managerial and financial accounting purposes, but the high cost of information collection meant that the costs of maintaining two systems exceeded the additional benefits. Thus companies relied primarily on the same information as that used for external financial reporting to manage their internal operations.

3.5 The period of lost relevance

There are many service organisations which do not have finished goods stocks or work-in-progress. They require management accounting information to ascertain the cost of each service and its contribution to total company profits. These organisations do not have to conform to any financial accounting requirements for the purpose of tracing costs to various services. Nevertheless, most service organisations adopted traditional product cost accounting techniques, based on arbitrary overhead allocations, to trace costs to the different business segments. Dearden (1978) suggested that compared with manufacturing organisations, management accounting systems in most service organisations evolved at a later stage. Consequently, when they implemented systems, they sought advice or employed accountants from manufacturing industries that had been using cost accounting systems for decades. This resulted in service organisations adopting traditional product costing techniques.

In recent decades customers have demanded a wider range of products, production technology has changed, product life cycles have shortened, and advances in information technology have resulted in a dramatic decline in information costs (Drury, 2000). The changing environment required that companies reconsidered their decision not to invest in a separate, more relevant and timely management accounting system. However, Johnson and Kaplan (1987) claim that, by the time these events unfolded, organisations had become fixated on the cost systems of the 1920's. Furthermore, when the information systems were automated in the 1960's, the system designers merely automated the manual systems that were developed in the 1920's. Johnson and Kaplan (1987) conclude that the lack of management accounting

innovation in recent decades and the failure to respond to its changing environment resulted in a situation in the mid-1980's where firms were using 30-year-old management accounting systems that were obsolete and no longer relevant to today's competitive and manufacturing environment. This lost relevance of management accounting in the changing environment of recent decades, has had an effect on the teaching and the applicable theories of management accounting as will be discussed in sections 3.6 and 3.7. The reason for this is that the understanding and evaluation of the changing environment is based on theoretical principles and rules, which can be seen as a substructure of management accounting.

3.6 Introduction to the changes in the teaching of Management Accounting

The first issue of the Journal of Management Accounting Research (JMAR) included a trio of papers written by senior members of the management accounting teaching profession describing where management accounting had been and where it was going. Two of these authors' observations can be summarised as follows:

Robert Anthony (1989:3) said that in the 1930's the closest things to management accounting textbooks were cost accounting books. He also noted the difference between cost accounting and management accounting: "... cost accounting texts dealt entirely with numbers, while management accounting recognises that human beings use the numbers."

Anthony (1989) said the objective of cost accounting was to find the cost of manufacturing products, whereas the objective of management accounting was to help managers use accounting information to run their organisations. He went on to describe the introduction of topics like differential costs, transfer pricing, present value, cost of capital, and profit centers into the field of management accounting; the field picked up these topics as companies introduced them into practice or as management accounting professors learned of their use by studying problems faced by company managers.

In the same (first) issue of JMAR Professor Charles Horngren (1989: 22) described how he was introduced to differential costs while teaching at the University of Chicago, where he worked with Professor Vatter. He also presented an interesting table showing how the contents of cost accounting books had changed: the number of chapters devoted to inventory valuation (costing of inventory) had declined from 73 per cent in the 1945 to 1950 period to 46 per cent by the 1970's; chapters devoted to cost control (budgeting, cost variances, etc.) had remained the same during this period; and chapters devoted to management decision-making (e.g., make-or-buy decisions, special price decisions, return on investment analysis, etc.) had increased from six per cent in the early period to 33 per cent in the 1970's. The big shift in emphasis in cost accounting texts over this 25-year period is consistent with the changes taking place at the Institute of Management Accounting (IMA) and the Chartered Institute of Management Accountants (CIMA). The primary publication of the IMA began life as the N.A.C.A. Bulletin in 1925, which handled issues such as product costing and budgeting. In 1957 it became the N.A.A. Bulletin (dropping the "cost section" of the name) and in 1965 the name again changed to Management

Accounting. In the 1990's management accountants took another leap forward as they became much more involved in the financial affairs of their companies, and this led to the name of the monthly publication being changed to Strategic Finance. The Chartered Institute of Management Accountants, which is based in London, also acknowledged the shift in the management accounting environment and textbooks, given that the name and angle of their monthly publication went through similar changes and the name of the publication is currently Financial Management (Parker, 2002).

A review of seven current management accounting texts shows that they devote about 35 per cent of their chapters to decision-making topics, which is almost the same percentage as that for the 1970-era books. The books have changed little (in terms of their decision-making content) since the 1970's.

In summary, the economy is changing, the textbooks are changing, the professional organisations are changing, and the subject matter of management accounting is changing. This leaves the accounting educators with many challenges, the biggest of which concerns the learning process. In the learning process the focus should be on developing the ability to identify problems, seek opportunities, search for desired information, analyse and interpret it and reach a well-reasoned conclusion from these alternatives. This will only be achieved if our management accounting educators are able to devise management accounting education programmes that teach students to use their critical faculties, and furthermore to do so independently. This is far more challenging and exciting than merely "transforming the body of knowledge" (Mulder, 2000: 18; Maher, 2000).

3.7 A half-century of management accounting education and practice

It is clear, as discussed in sections 3.2 to 3.5, that management accounting has been evolving, and a closer look at the major events of the past 50 years might be useful in helping to see where the discipline is now. Such a survey can begin with the direct costing controversy, which reached its peak in the 1950's and 1960's. This is followed by comments on the mathematics movement in management accounting, the study of behavioural issues, the use of agency theory, and, finally, the shift to a study of how the real world of business influences management accounting. Each of these issues is dealt with in more detail below.

3.7.1 The Direct Costing controversy

The debate about direct costing can be viewed as the most significant event of the 1950's. The level of significance of this debate can be judged by the number of articles, books, and research studies published on this topic from 1950 through to 1959. A review of the listings under the title "direct cost" in the Accountants Index for these years shows 144 publications for the decade. To put this in perspective, the number of national accounting journals in the U.S. during this decade was probably under six.

The stage for a discussion of direct cost was set by two papers published in the 1930's: Harris (1936) in a paper entitled "What Did We Earn Last Month?" explored

how to compute net income under different inventory costing methods, and Kohl (1937) in his paper "What is Wrong with Most Profit and Loss Statements?" argued that all fixed costs should be excluded from product costs. Although these papers appeared well before 1950, they put the case for direct costing that was so heavily debated by accountants during that decade.

The defenders of direct cost (essentially marginal cost) cited many examples of cases in which net income based on absorption costs (basically average cost) gave results that seemed to defy all rules of logic. They showed cases in which companies with declining sales were increasing reported profits by simply building up inventory, and cases in which companies were reporting losses only because inventories were declining. Marple (1956) wrote a short paper illustrating the unusual results one would get for a company called the All Fixed Company. This company had only fixed costs and zero variable costs, so net income varied (for a given sales level) with the level of inventory.

On the other side of the case were the individuals arguing that sales people would cut prices too low if they received only variable costs instead of full costs for the products they were selling. Financial accountants used the matching concept (and income tax reporting requirements) to defend the use of fully absorbed costs to compute net income.

Several accountants - Marple (1967) and McFarland (1966) are the two best examples - carried the notion of direct cost beyond just the computation of net income to create a complete approach to management accounting based on the concepts of marginal

cost and contribution accounting. In this view all fixed costs are identified with various firm segments; these fixed costs come and go with the segment. If a company eliminates a segment, all the fixed costs traceable to that segment disappear. Likewise, all revenues generated by the segment have these same fixed costs deducted to arrive at the segment contribution. This results in a contribution hierarchy in which segments near the top of the organisation carry more fixed costs than segments near the bottom. It also means no cost allocations appear in any management reports.

Horngren's (1962) early cost accounting book presented the contribution approach to management accounting, but a review of published articles for the past 20 years indicates that this approach does not enjoy wide acceptance. Anecdotal evidence suggests some companies (e.g., Dresser-Komatsu, Nortel, Green Seed Co., Saint Communications, and several firms in the south eastern U.S.) do use contribution accounting for management reporting, but it has not received wide discussion in the accounting or management literature since the 1960's. This may be because very little can be said about contribution accounting and direct costing that was not already said 40 years ago.

3.7.2 Mathematics of Management Accounting

A study of Kaplan (1983) suggests that mathematics was the next big idea to strike management accounting education. The Ford Foundation provided money to upgrade business education during the 1960's, and one of its programmes provided quantitive training for business school professors. This was part of an attempt to make business education more scientific and, since mathematics is the language of science, it seemed appropriate for a business faculty to be mathematically literate.

This idea filtered into the teaching side of management accounting and a few management accounting textbooks appeared during the 1970's with a heavy (and in some cases almost exclusive) mathematical emphasis. These books covered inventory models, linear programming, regression analysis and Bayesian decision-making, among other topics. Wherever possible the authors used a mathematical approach to a problem instead of an alternative presentation. The Kaplan book, Advanced Management Accounting, published in 1983, probably represents the last hurrah of this view of management accounting. Only three of the seventeen chapters (Chapter 2: "Cost Behavior Patterns," Chapter 13: "Decentralisation," and Chapter 16: "Executive Compensation and Bonus Plans") were devoid of any mathematical notation. The book even had a chapter covering Cost Volume Profit (C-V-P) analysis under uncertainty, a topic not for the mathematically faint of heart (Kaplan, 1983).

In the next edition of his book (Kaplan and Atkinson, 1989) almost all the mathematical notation disappeared, and the material focused much more heavily on management decisions and the structure of organisations. For instance, the first

edition of the book included two chapters on C-V-P. The first chapter focused on deterministic extensions of C-V-P, and the second chapter dealt with C-V-P under uncertainty. The second edition of the book included one chapter on C-V-P; this chapter covered the basics of C-V-P with minimal mathematical notation. Further, it expanded the topic to include the concepts of what-if analysis and simulation using spreadsheets. More importantly, the second edition focused the discussion on management issues related to the use of C-V-P rather than on the techniques of C-V-P, as did the first edition. The second edition was clearly aimed at managers, whereas the first edition was aimed at the technician who could work with mathematical models.

The third edition of the book moves even further in the direction of management decisions (Kaplan and Atkinson, 1998). The three versions of the book capture the flavour for much of what has changed in management accounting during the past 20 years. Table 1 (refer to the next page) shows the topics in the three versions to indicate this change from mathematics to management decisions. The topics covered by the three editions of the book were placed into two categories: "Traditional" Topics and "Management Decision" Topics. Different people, of course, can do the classification differently. Nevertheless, the categorisation does show a growing emphasis on topics related to management decisions (Binnersley, 1996: 32-34).

Table 1

Traditional topics versus Management decision topics
(Kaplan and Atkinson, 1998)
"Traditional" Topics
Cost behaviour and regression
Cost-Volume-Profit Analysis
Cost analysis and pricing
Variances for sales and costs
Cost allocation
Cost-Volume-Profit Analysis
Cost estimates and regression
Cost data and pricing
Sales and profit variances
Cost allocation
Cost behaviour
Assigning costs to centers
Activity-based costing
"Management Decision" Topics
Decentralisation
Profit centers
Measuring quality
New techniques for manufacturing operations
Investments in new technology
Executive contracts
Formal models for budgeting and incentive contracts
Activity-based management
Balanced scorecard
Financial measurement of performance and non-financial measures
Economic Value Added
Measuring customer, process, and employee performance
Incentive compensation systems

Not only does the third edition devote more space to these topics, but also the authors' discussion of even traditional topics like cost allocation has a management flavour. For example, in one discussion of cost allocation Kaplan and Atkinson (1998: 65) describe the decision framework in which such a procedure might be used and the effects that the data can have on the manager using the data. The desired manager behaviour becomes the focus of the discussion instead of the rationale for the allocation.

The number of cases included in the book has also grown with each edition:

* the first edition had only 11 cases,
* the second edition included 30 cases and
* the third edition has 47 cases.

A book that began its life as a treatise on mathematical tools for accountants has evolved into a book on how managers can use financial and operational data to run organisations. The changes in this book reflect how management accounting has moved away from its interest in mathematics. Fortunately, management accounting has passed through this stage and is now focused more on finding relevant management issues to study instead of, for example, solving EOQ equations, using constrained optimisation techniques such as linear programming.

3.7.3 Behavioural Accounting

People do react to accounting numbers, and a group of management accountants began to study this issue in the 1960's. Numerous papers appeared reporting how people reacted to the numbers produced by the accounting system. One of the most practical studies was one commissioned by the National Association of Accountants dealing with the issue of participation in the budgetary process (Swieringa and Moncur, 1975). The generally accepted view of budgeting presented in the textbooks of that day was that the more participation a company could get in the budgetary process, the better the budgets would work. Their study showed that in some circumstances this was true, but it also showed other circumstances in which active budget participation could frustrate the objectives of top management and lead to practices very damaging to the overall company.

Today accounting scholars still study the manager-accounting system interaction, but the only impact this work seems to have had on what is taught in management accounting courses is that most management accounting books now acknowledge the importance of behavioural issues. Unfortunately, not much of this research has made its way into the mainstream of management accounting courses. The reason could be because of the difficulty to project people's behaviour in various business environments and circumstances.

3.7.4 Agency theory

Instead of studying people, another group of academics looked at abstract representations of people who could be rigorously analysed by using a principal-agent framework (Boer, 2000). These scholars represented people through their utility functions, and studied the notion that people work to benefit themselves instead of the total organisation. The term "agency theory" is used to describe this field of study. This model allowed researchers to devise rigorous mathematical representations of owners' (principals) and workers' (agents) behaviour under alternative contracting schemes between the two.

Unfortunately, as with the behavioural research, very little of this work has made its way into the teaching of undergraduate management accounting. The work has made management accountants much more sensitive to the incentive effects of management accounting systems, but direct applications of agency theory to actual day-to-day operations in organisations are difficult to find. This is disappointing because the model seems to have much possible value. Perhaps this explains why researchers are still working to develop applications of agency theory to management accounting - the potential payoff still attracts the best and the brightest to try one more time to create workable applications that managers can use in their day-to-day operations.

In graduate-level courses, one can find more uses of agency theory, perhaps because graduate students expect to work with more abstract material and because they are better equipped with the quantitive tools required to use these models.

3.7.5 Real-World discoveries

In the early 1980's, management accountants began to look at real businesses again to see what could be learned from an examination of business practices. The Management Accounting Section of the Academic Accounting Association (AAA) held conferences at which academics discussed how to use cases to promote the teaching of management accounting, and a number of academics began to study accounting phenomena using data from real companies. The number of management accounting academics using data from companies has risen significantly since Professor Kaplan (1983) first began calling for this type of research. Banker et al. (1995), Banker, Lee, and Potter (1996), Banker, Lee, Potter, and Srinivasan (1996), and Banker and Evans (1997) have done numerous studies of management accounting issues by analysing data from real companies. Textbooks have started to use more references to real companies in discussing ideas presented in the books, and many more managerial accounting cases are appearing. The annual research conference of the Management Accounting section of the AAA now includes a joint session with the IMA at which companies present live cases based on their practices.

Issues in Accounting Education have been publishing cases that faculties can use in their courses for several years. During the past five years 11 cases on management accounting have been published in this journal. It is interesting to note that eight of these cases deal with issues for non-manufacturing companies.

It seems the call to make management accounting more relevant to the real world has brought many more references to real companies and the problems they face into the teaching of the subject. Given the major events of the past 50 years, the possible effects on management accounting today will be addressed in the following section.

3.8 Where are we today?

Right now management accountants seem confused about who or what they are or what the field of management accounting is or should be about. Opinions seem to differ as to whether or not significant changes in management accounting are necessary, but many commentators have stated that management accounting is in a crisis and that fundamental changes are required (Maher, 2000; Gabbin, 2002; Sharma, 2000).

The principal criticisms of current management accounting practices can be summarised under the following headings (Drury, 1988):

* Conventional management accounting does not meet the needs of today's manufacturing and competitive environment where a more holistic approach should be adopted.
* Traditional product costing systems provide misleading information for decision-making purposes.
* Management accounting practices follow, and have become subservient to, financial accounting requirements.

* Management accounting focuses almost entirely on internal activities, and relatively little attention is given to the external environment in which the business operates.

Some of the material appearing in current management accounting textbooks about "new manufacturing" is very similar to the kind of information in the original Cost and Production Handbook (Alford 1934). At the same time that management accounting texts seem to be rediscovering the past, they are also talking about balanced scorecards, strategic cost management, and the theory of constraints. In a way, the texts seem to be moving back to the past and into the future simultaneously.

The change by the Institute of Management Accountants of the name of its flagship publication from Management Accounting to Strategic Finance (refer to section 3.6) indicates that management accounting practitioners think they need a new image. It is not clear just what the new image should be, but a recent study by the IMA about the type of work its members do, showed some interesting trends (Russell, Siegel and Kulesza, 1999). The two most important tasks for IMA members reported in this study are long-term strategic planning and process improvement. The top skills IMA members reported as the most important were computer skills/technology/networks, accounting software, and teaching/speaking/communication. None of these topics appear in management accounting textbooks.

Currently, management accountants seem to be enamoured of average cost computations, as evidenced by the numerous activity-based costing papers discussing the different activities accountants can use as weights for computing average unit costs (for products) and average operation costs (for operations activities). An average cost is still just an average cost, regardless of the number of weights used to compute it; so one can predict that this interest in average costing will fade as accountants realise managers still need incremental costs when making decisions. Most management decisions require future projections of incremental cash flows instead of historical averages of past activities (Burns, 2000; Fowler and Hawkes, 2004).

It seems that management accounting is going through a major shift from its past structure to something else. Since we are in the middle of this shift, it is hard to get a reading on exactly what is happening. If anything does appear to stand out in the confusion and noise of the present, it is that management accountants must learn to understand much more clearly the decisions that managers in their companies make (Binnersley, 1996). Only with a complete understanding of the decisions managers make will the management accountant be able to create meaningful analyses of decision alternatives. Understanding company strategy is critical to the creation of meaningful management accounting systems: a management accounting system that supports company strategy creates value, but a management accounting system that ignores company strategy destroys value. A value-creating management accounting system directly supports the decisions of managers as they work to implement company strategy.

Companies needed accountants in the past because they were the only group with the numerical skills to provide the financial analyses managers needed for decisions; however, spreadsheets now enable any manager to do his or her own analyses. If the management accountant does not directly contribute to the value of the decision-making process, company managers can hire individuals with training in, say, economics, and have them prepare the analyses the managers need. The accountant is no longer indispensable. By focusing on problem-solving skills and the organisational context of decisions, rather than the facts of management accounting methods, educators can help students to be creative problem solvers who add substantial value to their organisations (Boyce, 2004; Mulder, 2000).

3.9 The future of management accounting education

The future of management accounting teaching and practice will be different from the present or the past, and technology will be one of the primary driving forces in this change in management accounting. The nature of management decisions is also different from what it has been in the past, so management accountants will have to shift away from a somewhat static cost orientation to a more dynamic cash-flow orientation (Parker, 2002; Gabbin, 2002). The impact of technology, the importance of dynamic cash-flows and the growing number of service organisations, on the future of management accounting education and practice will be discussed in the following four sections.

3.9.1 Technology

Technology will enable managers to do for themselves what accountants did for them in the past (Maher, 2000). Fifty years ago managers relied on the management accountant to do calculations because the management accountant was skilled at manipulating and processing numbers. Today, every manager has a desktop computer running spreadsheets and databases that permit a quick manipulation of data for a wide variety of analyses, from pricing special offers to evaluating make-or-buy decisions. The management accountant is no longer needed for his/her computational skills - the computer has taken over this function (Gabbin, 2002; Bromwich and Bhimani, 1994).

In this environment, the management accountant will survive only by adapting to the changing surroundings. Management accountants can add value to an organisation by becoming consultants who help managers structure financial analyses so that these managers can make reasoned decisions about the use of company resources (Parker, 2002). Using their knowledge of data collection and processing systems within the company, the management accountants of the future will help managers interact with the system to minimise the time a manager must spend on creating analyses (Russell and Kulesza, 2000). The management accountant will help managers define problems, identify relevant data for analysing problems, suggest sources of data from the various company systems to help with the analysis, and locate external data sources for information on e.g. commodity prices and competitor sales (Burns, 2000).

Burns (2000) supplies the following example: Suppose a purchasing manager at an airline must decide how much fuel to purchase each time a plane lands at an airport. The purchasing manager must balance economic factors, such as fuel cost, against supplier relations to make sure that a small cost reduction does not harm a fruitful supplier relationship. Fuel prices can vary from one airport to another so that loading up on cheap fuel can sometimes pay. However, the extra fuel a plane carries adds to its weight, which causes it to burn additional fuel. In this case the management accountant uses his or her knowledge of financial analysis to help the manager design a model that balances the added cost of carrying the fuel against the reduction in the price paid for the fuel. This model includes a function relating the fuel burn rate for each plane to the weight of the plane. Next, the management accountant reviews the systems the airline uses to track fuel levels on planes and the current price for fuel at various airports. She/he combines the data from this system with the model to display information to the purchasing manager that allows him quickly to choose the amount of fuel to purchase for each plane when it lands. In this instance the management accountant used his or her knowledge of company systems and computer modelling to create a tool that allowed the purchasing manager to focus on buying decisions instead of on analysing the data for these decisions.

For reporting, the management accountant will develop personalised reporting systems tailor-made to fit the needs of each manager. One of the management accountants for a multinational firm located in Nashville has developed a system in which each manager effortlessly receives the financial information of interest to him or her. The manager loads into a spreadsheet a file the company transaction processing system prepares each week. The spreadsheet holds, for example, all the

company sales data, but presents to each manager only the sales data for which that manager is responsible. The management accountant, using Visual Basic, has developed a personal menu bar for each manager. This menu bar has a list of the various data the manager might want to review, and the manager can click on the specific list of data he/she wants. This brings up a spreadsheet or a graph depicting the data. Every manager has a different personalised menu bar.

In this case the management accountant used his skills to identify the information of interest to each manager and then built a tailor-made spreadsheet to present to each manager only the information that manager needed. The accountant devoted significant effort to creating the first spreadsheet, but the additional spreadsheets required little effort because the original code could be easily modified to fit the specific needs of other managers. Some managers wanted graphical reports, some tabular, and some analyses of the data. The management accountant personalised all these items for each manager (Burns, 2000).

This approach to information/presentation/personalisation probably will become much more common in future, and it has implications for the way management accounting is taught (Boer, 2000). It requires that students be trained to become much more adept at designing alternative ways of presenting information to managers; more time should be spent in the classroom discussing the advantages and disadvantages of different information presentation models. The principles of graphical representation of data, the format of tabular presentations, and the implications of how managers actually use data will become much more important in teaching management accounting in the future. Management accountants will have to be trained to focus

more on the user interface with the system and less on how the system processes data (Boer, 2000).

3.9.2 Database capabilities

Another form of technology that has a significant impact on management accountants is the widespread adoption of database management systems. These systems enable companies to capture data at a micro level for later reassembly into blocks of usable information. Staubus' (1971) Activity Costing and Input-Output Accounting proposed an accounting system that captured data on input and output activities at a very detailed level.

For example, a sales transaction might include information on these items:

* Date
* Customer identifier
* Product identifier
* Ship-to address
* Distribution channel
* Mode of shipment
* Quantity shipped
* Special sales terms code
* Special credit terms code
* Salesperson

A cost transaction might include data on:

* Date
* Customer identifier
* Product identifier
* Expense code
* Approval code
* Location code

With the use of these data a management accountant (or manager) could extract information on revenues or costs traceable to a customer, a product, a salesperson, a region, or a distribution channel. Decision-makers who want information on the relative value of items shipped by mode of transportation can get it as readily as information about which customers are the heaviest users of price discounts. Modern database software (e.g., Oracle, PeopleSoft, or IBM's DB2 for large enterprise systems, or Microsoft Access for personal computers) allows management accountants to extract anything the system has captured in any format that makes sense to the manager.

Because of the ease of data retrieval from databases, management accounting teachers should spend more time helping students think about what data to capture for each transaction (Boer, 2000). If a company captures the correct data, it is easy to do analyses using the data later. In fact, companies can keep the data at the transaction level and accumulate it only when needed, i.e., a company could generate a general ledger only when it needed one instead of producing it monthly. The same holds true

for other management reports: the system would generate a report only when the manager requested it. In this kind of world, management accountants create a personal menu of reports specifically tailored to a manager's needs, and the system extracts and compiles the data from the database only when the manager requests it. The system provides just-in-time reports. In fact, the accountant can build rules into a system that causes the system to produce manager-specified information whenever one or more predefined events occur (Burns, 2000).

The personalisation of information presentation made possible by this software enables managers to implement the notion of "different costs for different purposes" described by Clark (1923) and Vatter (1954) and the multiple cost systems described by Kaplan (1988) with ease. Kaplan argues that managers need systems to present information: to external users (like investors); to managers for operations decisions; and to managers for product cost review. Each approach requires a different arrangement of data, and the database system enables management accountants to prepare any analysis a manager wants economically, if the system collected the appropriate data in the first place. Arranging cost data into different groupings so that managers can use alternative cost summaries for different decisions also requires that the data be captured at the appropriate level of detail when the transaction occurs. This is why it is so important for management accounting teachers to develop in their students the skills needed to help managers identify the data elements that should be captured with each transaction.

Part of a management accounting course should be to use this approach, and students should learn to extract the data they need from a database instead of reading it from a printed report. They work with "numberless accounting problems". Any data they need they must select from a database of transaction data. These exercises would require students to define what they would need for solving a problem instead of trying to take data from a printed report and figuring out how to use it (Burns, 2000). They choose the fields in which to search, the ranges to search for, and the logic operations required to extract the data. This helps them understand that real-world data does not always fit the problem they are trying to solve, and it requires them to think about what data they need before trying to draw information from the database (Burns, 2000). It also means they must ask the question, "What cost data do I need to prepare an analysis for the question asked by this manager?" They must make operational the idea of "different costs for different purposes".

The database approach to teaching management accounting also makes it relatively easy to demonstrate to students the concept of marginal analysis. Dropping a customer means all revenues and costs related to that customer go away. It is easy to demonstrate this by selecting all revenue and cost transactions for the customer from the database. The same is true for a product or a salesperson: the student simply supplies the code for the appropriate product or salesperson and receives the total costs and revenues for that item (Kaplan, 1988).

3.9.3 Cash estimates

Management accounting teachers should shift their emphasis from a cost focus to a cash-analysis focus (Fowler and Hawkes, 2004). Much of our cost-analysis material assumes a relatively static world inhabited by organisations with a stable product line or with stable organisations growing at a modest rate. This view of the world holds true for a sizable number of organisations, but there are many organisations today that are growing rapidly, that are adding and dropping products at a blinding pace, and that are constantly changing their organisational structure (Drury, 2000).

Determining product cost for a company with a product life cycle of 12 months seems pointless because the product cost will have little value for managers. Why worry about dropping a product because of its unit cost when the product will be dropped in a few months anyway and replaced with a later version or a completely different product? The crucial decision point for products like these comes before the product is even produced, a time when managers are considering company strategy and customer strategy. That is, the decision locus shifts from deciding which product or customer to keep to deciding which product or customer to add. These are the decisions that determine the future shape of the company. The appropriate form of analysis for these decisions is a cash analysis that takes into account all incremental future cash outflows and inflows associated with alternative strategies (Fowler and Hawkes, 2004).

With a cash analysis, managers consider all factors influencing cash flows without worrying about whether the correct amount of overhead is included or whether the costs are relevant to the analysis (Allen, 2002; Boer, 2000). Cash inflows can come from revenue, sale of inventory, or sale of a plant asset. Cash outflows can be for materials, labour, overhead, asset purchases, or marketing expenditures.

Using this approach avoids sticky issues like: What is overhead cost? How much of the capital expenditures do we include in the unit cost? Does the unit cost for one product receive more overhead than for another product? All these issues are incorporated into the cash analysis. This form of analysis also supports decisions such as customer selection. The management accountant helps managers evaluate the cash flows associated with different customers to determine which customers to add to the company portfolio of customers and which to drop. Again, with cash analysis the management accountant helps the manager identify the cash-flow impact of changing the mix of customers without getting into the knotty problems of trying to determine the "cost" of servicing different customers. Cash-flow analysis makes it easy for accountants and managers to focus on the economic impact of changing customer mix instead of worrying about how to "cost" a customer (Binnersley, 1996).

3.9.4 Service organisations

In the future much more attention should be paid to service organisations in management accounting textbooks as compared to the overall manufacturing focus of current books. A look at the table of contents of seven management accounting books, including the most popular ones, indicates that all but one are still locked in a manufacturing mindset. Job cost, product cost, and cost variances for manufacturing firms and the allocation of overhead costs to products still play a prominent role in the discussions found in these management accounting books. What is needed are books that do not take ideas that worked in manufacturing and apply them to the service industry, but books that are organised around the issues managers of service organisations face. The financial consequences of alternative personnel scheduling regimes, measures of the effectiveness of fixed resource utilisation, and product profitability analyses for products with little or no variable costs are some of the issues service industry managers face (Dearden, 1978).

Yearly more and more Gross Domestic Product in our economy comes from the service sectors and clearly, management accounting educators must begin to address this issue in the material taught. There is so little material about service organisations because it is difficult to make generalisations about them. It can be said with some degree of certainty that service organisations do not have inventory problems, but it is difficult to say what kinds of problems are general to them. Most manufacturing and distribution company activities focus on the movement of inventory through the organisation, but what unifying theme is there for service organisations?

Also, service organisations have idiosyncratic features. Hospitals are very different from banks, and banks are quite different from dry cleaners, but they are all service companies. This explanation may provide teachers with an excuse for not delving more deeply into the teaching of service organisation materials in their classes, but it will not prevent them from becoming less and less relevant to the people who hire their graduates.

To do a better job of teaching management accounting for the service industry, teachers need to improve their understanding of the major decisions service managers make (Boyce, 2004; Boer, 2000). For example, management accounting teachers have a clear understanding of product-mix, pricing, and make-or-buy decisions for manufacturing organisations, but they do not understand the critical decisions that are made by service managers. During the past five years eight cases on issues faced by service industry managers have been published dealing with such diverse issues as capital budgeting for a hospital, incremental cost for a governmental unit, pricing for a dairy, and relevant cost calculations for a movie producer. Educators need many more cases on the service industry, and it is hoped that management accountants will continue to write and publish cases on it so that educators can stay relevant to the companies hiring their graduates (Boer, 2000).

3.10 Conclusion

The world in which management accounting operates is changing - dramatically - and this means how and what students are taught, will have to be modified (Howieson, 2004). However, a look at the table of contents of some current management accounting texts indicates there may need to be further change. The topical coverage of many of these books may have been well suited for students training to be cost accountants before computers were developed, but has little value for students training to be decision support personnel for modern managers. Moreover, the books cover topics cost accountants find interesting instead of issues managers find important. For example, cost accountants compute product costs, but managers evaluate customer selection and customer value; cost accountants do cost allocations, and managers worry about competitive strategies; cost accountants develop budget and cost variances, but managers struggle to modernise and streamline operations. There seems to be a disconnect. The IMA and CIMA changed its monthly publication to Strategic Finance, presumably because it better describes what management accountants do, but what does product cost, budget variances, or cost allocation have to do with financial strategy? If educators want to make their management accounting courses relevant to future managers, they should develop courses that address the strategic issues facing company managers instead of creating courses that cost or management accountants find interesting (Boyce, 2004).