

The origin and development of management accounting

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Abstract

The aim of this article is to investigate the origin and development of management accounting and to assess to what extent it has been based on functional principles. For the purpose of the analysis management accounting thought is categorised into three frameworks namely functional, interpretative and radical (Hopper and Powell 1985).

It finds that in respect of the origin of the subject two of the schools of thought namely for the purpose of increased efficiency during the Industrial revolution (Edwards, Boyens and Anderson 1995) and as a result of the internalisation of the market (Chandler 1977) can be categorised as functional. Three other views namely the exploitation of society by capital (Neimark and Tinker 1986), the labour process approach (Hoskin and Macve 1988, Hopper, Storey and Wilmott 1987) and as an instrument for the advancement of the profession (Armstrong 1985), take a radical approach.

The majority of the management accounting developments between the origins of cost accounting and the 1970s were of a functionalist nature, whilst during the period between 1970 and 2000, several approaches that can be categorised as interpretative or radical came to the fore.

Key words

Origin of management accounting
Development of management accounting
History of management accounting
Management accounting frameworks

"If you would understand anything, observe its beginnings and its development"

(Aristotle in Littleton 1961:3)

1 Introduction

1.1 Objective of the article

Not much has been written about the history of management accounting and it has tended to be viewed as a "dusty" specialist topic with no relevance to current practice or theory (Loft 1991). However, with management accounting history, as with general history, change is a permanent feature and without an understanding of its development, we are poorly equipped to understand or guide its direction. As Littleton (1961:3) so aptly puts it, "we are badly poised to assist the wiser movements if the trend is too dimly perceived".

Several authors have suggested that management accounting is predominantly based on the functional framework or school of thought (Belkaoui 1992:514, Neimark and Tinker 1986, Kelly and Pratt 1992). The objective of the paper is to assess to what extent this is true regarding the origin and development of the subject. For the purpose of the analysis management accounting thought is categorised into three frameworks namely functional, interpretative and radical (Hopper and Powell 1985).

More specifically, the article aims to ascertain to what extent the origin and development of management accounting has been based on the functional framework.

1.2 Limitations, scope and methodology

The study aims to provide an overview of the origin and development of management accounting in so much as it is possible to study historical events relating to such a long period by referring to literature available in the English language. Although it is acknowledged that significant developments took place in several countries, the focus of this paper is on the developments that occurred in the United Kingdom and in the United States of America.

The article is limited to a study of secondary sources of literature, since a comprehensive examination of primary sources for the period under consideration is impractical.

Although the description "management accounting" only came to the fore during the 1960's it is not deemed necessary to distinguish between "cost accounting" and "management accounting" for purposes of reviewing its origin and development. These terms are thus used interchangeably.

It is currently far from clear how management accounting relates to the other accounting sciences. Some view it as a division of the accounting sciences

whilst others see it as a combination of accounting, the managerial sciences as well as a variety of other subjects including sociology, psychology and mathematics. One could therefore argue that in order to have a clear understanding of the origin and development of management accounting, one should study all these related sciences. It would however not be possible to perform such a comprehensive investigation within the scope of one article and the extent of this paper is therefore limited to a study of the origin and development of management accounting only.

1.3 Structure of the article

The paper firstly addresses the different frameworks of management accounting thought in order to analyse to what extent the origin and development have been governed by the foundational principles which underlie these frameworks.

It then focuses on the origin of management accounting whereupon it reviews the developments normally associated with the subject.

In order to make the discussion of the developments of the subject more manageable the investigation is approached chronologically and the period of several hundred years has been divided into five stages namely:

- the period from the origin of cost accounting to 1880 (origin -1880);
- the scientific management period (\pm 1880-1914);
- the period including the two World Wars (\pm 1914-1945);
- the period after the Second World War to 1970 (\pm 1945-1970); and
- the period subsequent to 1970.

Frameworks of management accounting thought

1.1 Introduction

There is no universally accepted view in respect of the origin and development of Management Accounting. The subject is the creation of a vast number of writers and practitioners who each have their own idea regarding its purpose. It is however necessary to attempt to classify the many different approaches in order to guide practice and research. Puxty (1998) classifies the foundations of management accounting thought into five frameworks or paradigms. These are the traditional paradigm, the systems movement, the interpretative approach, the radical critique and finally, universal abandon. Hopper and Powell (1985) undertook a similar investigation and classified management accounting thought into three frames of reference namely functional, interpretative, as well as radical. Their framework is essentially based on the basic sociological framework of Burrell and Morgan (1979).

The Hopper and Powell (1985) approach can be reconciled with that of Puxty (1998). Both their classifications contain a category for the interpretative approach. Instead of distinguishing between the traditional and the systems framework, Hopper and Powell (1985) combine these two under the functionalism heading. They also combine the radical critique with the universal abandon approaches.

For the purpose of analysis in this study the three frameworks used by Hopper and Powell (1985), namely functional, interpretative and radical, will be applied.

1.2 The functional framework

Functionalists are interested in explaining the social order from a realist, positivist and deterministic standpoint. It is very characteristic of mainstream accounting (Belkaoui 1992:514). Theories that fall in this category view the behaviour of the employee as passive and determinable by managerial manipulation. Organisations are treated as stable empirical phenomena that are independent from any social and historical influences (Hopper and Powell 1985).

Functionalism covers a wide range of views. Objectivism views human nature as rational, controllable and predictable. According to Hopper and Powell (1985) most of conventional accounting can be placed in the most objective and regulatory region of the functionalist category. Scientific management, which incorporates standard costing, is a typical example of objectivism (Hopper and Powell 1985). This approach is based on the premise that the organisational world possesses the same characteristics as that of the physical world, and can therefore be governed by the same principles.

Due to the limitations of extreme objectivism, especially with regard to the social nature of man, many studies turned to social systems theory to study management accounting practice. These approaches include psychological and social psychological theories, structural theories, as well as open systems theory, which includes contingency theory. These approaches consider the effect of the social nature of man and extra-organisational factors on accounting systems.

In terms of pluralism, organisations are viewed as comprising of sectional groups with divergent and often mutually inconsistent goals. Common purpose only exists when groups are interdependent (Hopper and Powell 1985). Control is achieved by maintaining a set of rules that permit bargaining between the groups and the aim is to contain rather than avoid conflict, allowing for

maximum freedom (Hopper and Powell 1985:443). Pluralism does not comply with the main tenets of neo-classical economics namely rational decision-making, profit maximisation at the margin or long run equilibrium.

2.3 The interpretative framework

In contrast with functionalist theories that accept that people are formed and constrained by the social world which they inhabit, interpretative theories primarily focus on the peoples' perception of reality and individual meaning (Hopper and Powell 1985: 446, Belkaoui 1992:515).

People constantly create their social reality in interaction with others and the aim of the interpretative approach is to analyse such social realities in the ways in which they are socially constructed and negotiated (Hopper and Powell 1985: 446).

2.4 The radical framework

Radical theories reject the *status quo*. It questions the legitimacy of capitalism as a fair system for society and neo-classical economic theory as an appropriate foundation for management accounting. By not questioning wider social relationships such as the distribution of power and class relationships, functional and interpretative theories implicitly accept and support the *status quo* (Hopper and Powell 1985:450, Arrington and Francis 1989:2) and therefore takes the current nature of society as natural and given. Much of the work of radical theorists is based on Marxist theories (Hopper and Powell 1985). Since radical theories take the view that the nature of a society as a whole is reflected and shaped in every aspect of society, they also reason that accounting systems are an integral part of the capitalistic society, and that capitalism and accounting are interdependent (Hopper and Powell 1985: 450).

3. The origin of management accounting

3.1 Background

In the period preceding the Industrial Revolution, economic advancement predominantly occurred in the Middle and Far East (Chatfield 1977).

Some of the oldest surviving business records date back to the Chaldean-Babylonian, Assyrian and Sumerian civilisations. Various types of service businesses and small industries were established and the oldest known commercial documents date from 3 500 BC (Chatfield 1977:5). In Babylonian formal legal codes made record keeping compulsory. The most famous is the

Code of Hammurabi, which required that an agent selling goods for a merchant should give the merchant a sealed memorandum quoting prices. All these records were kept on clay tablets (Chatfield 1977:5). In Egypt the introduction of papyrus as a writing surface made writing less cumbersome and permitted a wider use of supporting documents. Despite the early progress, the development virtually stagnated for several thousand years. This might be ascribed to the inability to express goods in terms of a single substance (monetary unit) (Chatfield 1977:7).

During the Chao dynasty in China (1122-256 BC.), accounting reached a peak of sophistication which was hardly improved on till the introduction of double entry techniques. The Chaos, who used coined money, inherited and built on concepts of financial administration and accountability which originated during the Hsia (2206-1766 BC.) and Shang (1766-1122 BC.) dynasties (Hendriksen and Van Breda 1992:37, Chatfield 1977:10).

According to Chatfield (1977:10) coined money was invented in Greece in approximately 630 BC. One of the oldest and largest surviving records of a system of responsibility accounting was maintained by Zenon, a manager of a private estate of the finance minister of Ptolemy II in 256 BC. Each of the supervisors of the areas of the estate had to render frequent accounts of all transactions. The accounts were summarised and audited on a regular basis. This form of accounting system spread throughout the Mediterranean and the Middle East and was later adopted and modified by the Romans. The essential aim of this form of accounting system was the protection of the property of the owners (Chatfield 1977).

None of the above ancient forms of accounting provided any aid for decision-making or resembled cost accounting. Until the Industrial Revolution, records did not allow for separate costing by product lines and made no distinction between capital and revenue expenditure. This resulted in an inability to estimate the profitability of a product, a capital investment or an increased investment in labour (Chatfield 1977:11)

The Industrial Revolution which gained momentum roughly between 1760 and 1830 can be ascribed to a vast number of reasons, but the most well known are the technical inventions that reformed the manufacturing world. These include the steam engine by James Watt in 1765, the spinning jenny by James Hargreaves between 1764 and 1767 and Arkwright's spinning frame in 1768 (Ashton 1948). This period in Britain was also associated with a sharp growth in the population, a more extensive use of capital, and the conversion of rural into urban communities as well as a rise in new social classes (Ashton 1948).

In the United States of America the effect of the Industrial Revolution was not as marked and immediate as in the United Kingdom. Although it did have an indirect effect on the US economy, the factors that had the most remarkable effect were the coming of the railways and the telegraph around 1840 (Chandler 1977).

After 1840 and especially from 1850 to 1860 the railways and the telegraph revolutionised the traditional ways of production and distribution. Coal provided a cheap and flexible source of energy which enabled the railways to provide the fast, regular and dependable transportation so essential to high volumes of production and distribution (Chandler 1977:79). Technological innovation, the expanding income per capita as well as the rapid growth of the population increased the complexity of existing production and distribution processes and increased the volume and the speed of transactions. The existing market mechanism was often no longer able to co-ordinate these transactions effectively. This, according to Chandler (1977:484) created a need for administrative co-ordination. To address this need entrepreneurs formed large multi-unit organisations and appointed managers to administer them.

3.2 The different views on the origin of management accounting

3.2.1 Introduction

The period when management accounting originated and the reason for the development thereof, appears to be contentious issues. Some view the requirement for information to optimise economic resources during the Industrial Revolution in the United Kingdom as the beginnings of management accounting (Edwards, Boyns and Anderson 1995). Others such as Chandler (1977) as well as Johnson and Kaplan (1987) suggest that the creation of large corporations that internalised transactions, which were previously priced by the market, was the reason for its development. They are of the opinion that this occurred shortly after the coming of the railways and the telegraph in the United States of America.

A third view does not link the origin of management accounting to any specific time period, but sees it as a means for capital to exploit society and to justify and mystify the existence of structural inequality in society (Neimark and Tinker 1986). A fourth school of thought is that management accounting only originated when it was used for purposes of cost control and more specifically when accounting information was used to exert human accountability (Hoskin and Macve 1988).

Armstrong (1985) views the development as a result of efforts by the profession to develop their knowledge and techniques into systems of managerial control, in order to achieve managerial ascendancy.

3.2.2 Industrial Revolution

According to traditional history management accounting evolved from the techniques of cost accounting that were developed in England before and during the Industrial Revolution (Chatfield 1977:101, Loft 1991:19).

The need for cost accounting developed when the double-entry bookkeeping system was not able to provide owners with product costs for purposes of pricing, particularly in the engineering sector. As engineering firms grew more and more competitive, cost estimates were needed for bidding on special contracts for which no market prices existed (Chatfield 1977:159). At that stage manufacturers guarded their cost methods as industrial secrets and bookkeeping texts generally ignored the subject (Chatfield 1977:159).

Edwards, *et al.* (1995) suggest that management accounting was purely concerned with making the best use of available resources within certain constraints. Management accounting was viewed as an "independent variable", which passively served the needs of the organisation and neither shaped nor was shaped by the organisation or society.

Support for their view can be found in the number of case studies of archival records of organisations that operated before and during the Industrial Revolution in the United Kingdom. Investigations of the records of the Staveley Coal and Iron Works from 1690 to 1783 as well as from 1838 to 1900 revealed a complete integration of the cost and financial records; the use of transfer prices to measure departmental profits as well as the use of unit costs. These were analysed in detail for comparative purposes both between activities and over time (Edwards & Boyns 1992), (Edwards *et al.* 1995:31).

Fleischman and Parker (1990) found that during the period between 1759 and 1786, the Carron Company, a Scottish ironworks, practised cost management in the areas of expenditure control, responsibility and departmental cost management, overhead allocation, decision-making, budgets, forecasts and standards as well as inventory control. In 1740 the accountant of the Melincryddan Smelting Works distinguished between variable and fixed cost while deciding on the most profitable location, whilst Cyfartha Iron Works was recharging production overheads to cost centres and writing off general overheads to the profit and loss account in the 1790s (Cornes 1996:16).

Walsh & Stewart (1993) suggest that they found evidence of the implementation of accounting systems for purposes of managerial control in two separate studies, carried out before and during the Industrial Revolution. In their study of the operations of the New Mills Woollen Manufactory for the period 1681 to 1703, they found evidence of costing for purposes of pricing as well as information to control the flow of material. At New Lanark Cotton Factory, which was studied from 1800 to 1812, they found a much more sophisticated system of control over not only materials but also over the labourers. Accounting was used for the purpose of measuring productivity as well as to control the behaviour of labourers (Walsh & Stewart 1993:790).

Edwards *et al.* (1995:6) ascribe the difference between their view of the origin of management accounting and the other views mentioned below to the differences in environmental circumstances between countries. They contrast the long industrial history, steady rate of economic development and relatively ample supply of labour of the United Kingdom with the United States where industrial development started much later and industrialisation took place more rapidly against a background of labour shortages. Edwards *et al.* (1995) are also of the opinion that it is unduly restrictive to equate the development of management accounting to the use of accounting information to control human activity. As discussed above, they advocate a much broader role for management accounting.

3.2.3 Internalisation of the market

Chandler (1977) disagrees with the aforementioned view of management accounting being an "independent variable" and suggests that it played an important role in the development of the giant firm. According to him modern cost accounting originated during the middle of the nineteenth century with the advent of the railways and later the chemical, steel and metal working industries in the United States of America. These organisations were growing in size and their processes were growing in complexity, creating a need for cost information to determine prices and evaluate the performance of the businesses. He is of the opinion that management accounting did not merely arise because the growing organisation needed it, but that it facilitated this growth by means of focusing attention on the advantages of buying internally rather than through the market. Chandler also suggests that management accounting was not merely applied for the purpose of product costing, but also to aid internal control.

Williamson's (1975) transaction cost theory supports Chandler's view. He suggests that management accounting is a means of determining the prices of products in large corporations in the absence of a market system. The cost of co-ordinating internal transactions by means of management accounting is

lower than the cost incurred when entering into these transactions through the market, thus justifying its existence.

A study by Fleischman, Hoskin & Macve (1995) of the Boulton & Watt engineering practice during the beginning of the eighteenth century revealed that costing techniques to determine piece rates for labourers were 'once-off' exercises to establish fair prices, and thereafter only received sporadic attention. Based on these findings, they essentially agree with Chandler (1977), Williamson (1975) and Johnson and Kaplan (1987) that entrepreneurs did not really need cost accounting, as long as they were paying market prices for the output of each worker. Similarly, Fleischman *et al.* (1995:171) agree that detailed attention to the efficiency and control of labour was only required when entrepreneurs took the manufacturing process out of the hands of contractors and brought the workforce under their direct control.

3.2.4 A means for capital to exploit society

Neimark and Tinker (1986) view the reason for the origin of management accounting from another perspective. According to them management accounting is not a neutral mechanism for making organisations more efficient or to determine internal prices, but rather a means for capital to exploit society. In this vein they see management accounting as evolving to justify and mystify the existence of structural inequality in society. They suggest that Chandler and Williamson's view in terms of which the circumstances caused the firms to grow and to develop new structures, lacks a socio-historic perspective on human society. They suggest that corporations ignore the mental and physical health of their employees as well as the effect of the corporations on the environment.

In the same vein Loft (1991:31) suggests that management accounting developed because of its role as a disciplinary technique in the industrial society. She takes a Foucauldian approach in terms of which the factory is viewed as a disciplinary institution and accounting is viewed as one of the disciplinary techniques. In his book *Discipline and Punish: The Birth of the Prison* (1977), Foucault (in Loft 1991), describes a number of institutions like prisons, armies and schools as disciplinary institutions in which disciplinary techniques are practised. Loft (1991: 31) takes the view that accounting systems "recreate" the activities of the organisation in financial terms, enabling its control. It makes certain things visible whilst other things, such as pollution of the environment and the physical and emotional effects on the employees who have to do repetitive tasks, become invisible.

3.2.5 Labour process approach

The labour process approach is related to the Neimark and Tinker school's perspective of the development of management accounting. Whilst the Neimark and Tinker school takes a more general view, the labour process approach is more concerned with the processes through which labour is controlled.

Hoskin and Macve (1988) trace the origin of management accounting to the quantification of human performance at the West Point Military Academy in the United States of America. One of the pupils, Daniel Tyler, introduced systems of human surveillance and discipline at the Springfield Armory as a means of controlling the production performance of the labourers, between 1832 and 1842. They discovered that accounting was a powerful technique for harnessing human performance.

Hopper, Storey and Wilmott (1987) are of the opinion that cost accounting developed in the period of the homogenisation of labour in the 1870's, where the replacement of skilled labourers with semi-skilled labourers through mechanisation and increasing plant size, made it easier to substitute workers for each other. The growth in cost accounting in respect of aspects like labour efficiency was according to Hopper *et al.* (*ibid.*) not directed at increased efficiency, but rather at controlling labour. They theorise that early accounting developments were directed at making the finances of operations visible to the owners of capital. This shift of financial knowledge from labour to capital had a direct influence upon the distribution of economic rewards. They agree in essence with Hoskin and Macve about the reason for the origin of management accounting, but differ on the timing.

3.2.6 The advancement of the profession

The Institute of Cost and Works Accountants, the forerunner of the Chartered Institute of Management Accountants in the United Kingdom, came into existence in 1919. They aimed to increase the level of acceptance of their members as "professional accountants" and to further the spread of scientific costing techniques in the British industry. In the same year, the National Association of Cost Accountants (NACA) was formed in the United States of America (Freedman 1992). In the ensuing period the membership and regard for the profession grew rapidly.

Armstrong (1985) seeks an explanation for the existence of management accounting by studying the profession. According to him management

accounting does not exist because it increases efficiency as suggested by Johnson and Kaplan (1987), or because it enables owners of capital to control labour as thought by Hopper *et al.* (1987), but rather as a result of efforts by the profession to develop their knowledge and techniques into systems of managerial control, in order to achieve managerial ascendancy. He is of the opinion that the creation of the multi-divisional structures made the accountants ideally qualified for being in control of organisations because they possessed the knowledge and techniques necessary for making decisions about allocating capital. This position was also strengthened by the adoption of auditing techniques required by the investors of capital. Armstrong (1985) suggests that accountants created work for themselves, once controlling positions in organisations were attained.

3.3 Summary on the origin of management accounting

The first two of the above views on the origin of management accounting can be categorised as functional. The traditional view that management accounting evolved as an instrument of increased efficiency during the Industrial revolution has all the core assumptions of functionalism. It views costing techniques as tools to achieve predetermined objectives and human behaviour as passive, rational and controllable by managerial manipulation. It is also realist and positivistic in nature. The view that management accounting can be traced back to the period of the internalisation of the market has essentially the same characteristics, but does not see management accounting as an independent variable in the development of organisations. It is deemed to have played an active role in the development of the structure of organisations.

The last three of the above approaches can be categorised as belonging to the radical framework. Neimark and Tinker's (1986) view management accounting as a means for capital to exploit society. They question the legitimacy and fairness of capitalism and see management accounting systems as an integral part of the capitalistic society. The labour process approach of Hoskin and Macve (1988) is similar to that of Neimark and Tinker, but takes a narrower approach. They view management accounting as an instrument for capital to exploit labour. Finally, Armstrong (1985) and Hopper *et al.* (1987) see management accounting as an instrument that is used by management accountants to obtain positions of power. All three these views reject the *status quo* of the current society.

4. A chronological overview of the development of management accounting

4.1 The scientific management era ($\pm 1880 - \pm 1914$)

4.1.1 Background

The prolonged economic depression of the 1870s brought a continuing drop in demand, resulting in spare capacity and decreasing prices. Manufacturers explored new avenues of increased efficiency and turned their attention from technology to improved management of operations (Chandler 1977:272, Chatfield 1977:160).

During this period the operations became increasingly capital intensive and whereas previously, initial capital costs were low and output generated sufficient funds for expansion, new injections of capital were now required. The entrepreneurs who created the firms gradually reduced their shareholdings and level of involvement in the management of the organisation. By 1917, representatives of families and banking institutions played a limited role in the management of organisations (Chandler 1977:491).

4.1.2 Specific developments

According to Chatfield (1977:160), between 1885 and 1920 cost accounting evolved from a level where the methods resembled medieval bookkeeping to a point where the best practices approximated the descriptions in modern textbooks.

In 1885 Captain Henry Metcalfe published a book on cost accounting describing a system for assigning material and labour costs to jobs. He suggested a system of noting each material requisition and the time spent on jobs on separate "shop order cards", presenting in essence what is now referred to as job costing. Although this system did not incorporate overheads he illustrated four possible overhead allocation methods, namely as an arbitrary charge, a percentage of gross cost, a percentage of labour cost and as a charge depending on the time spent on production (Chatfield 1977:161).

Two years later in 1887, Garcke and Fells described a double entry job costing system that was completely integrated with the financial accounting records. Cost accounting now became mainly an accounting task, which until then had predominantly been developed by industrial engineers (Chatfield 1977:163).

In 1889 Towne (in Chandler 1977:274) described a gain-sharing plan that had been employed by his company since 1884, to the Society of Mechanical

Engineers. In terms of this plan any reduction in unit costs achieved through improved equipment and plant size, more effective scheduling, improved utilisation of machines and materials and more productive labour, would be shared equally between the company and its workers (Chandler 1977:274). In 1895 Frederick Taylor delivered a paper in which he pointed out that savings such as mentioned by Towne should not be based on past experience but rather on a standard time and output. This should be determined "scientifically" through detailed job analysis and time and motion studies of the work involved. He also suggested a differential piece rate, in terms of which the workers who failed to comply with the standard would be paid a reduced rate, while those who excelled would be rewarded accordingly (Chandler 1977:275).

In 1901, Alexander Church (in Chatfield 1977:166) published a series of articles on the allocation of overheads. Rather than viewing overheads as an unnecessary burden he saw it as a legitimate expenditure worth controlling. He believed that while the overhead allocation methods were satisfactory for historical reporting purposes they were inadequate for management decision-making. Church pointed out that the manufacturer needed to know his product's cost before it was sold, not months later when all the indirect expenses for the period had been accumulated and distributed. He proposed that the allocation of overheads should be based on machine hours and should firstly be assigned to individual machines or groups of similar machines whereupon it should be allocated to the products.

In a series of articles in the *Engineering Magazine* of 1908 and 1909, Harrington Emerson (in Drury 1996:832) suggested that accounting information systems could be employed to achieve efficiency objectives. He also stressed the importance of distinguishing between controllable and uncontrollable variances for purposes of control, an idea that is still contained in much of today's literature on responsibility accounting. In 1911 Harrison designed the earliest known complete standard costing system and in 1918 published the first set of equations for the analysis of cost variances, which are also still found in today's literature on standard costing (Drury 1996, Chatfield 1977:170).

4.1.3 The construction of the governable person

Miller and O'Leary (1987) interpret standard costing and budgeting as important processes which form part of a much wider apparatus of power, rather than simply an advance in the accuracy and refinement of accounting concepts and techniques. They see the development of management accounting in the context of what they call "the governable person". Persons have certain attributes that can be measured through which they can be controlled or

governed, and management accounting, along with scientific management, helps to make a person "governable".

They view scientific management as part of a movement to increase the efficiency of individuals for the collective good of society, which occurred during the first three decades of the twentieth century. In the name of national efficiency, the government set standards and norms for aspects such as mental health, intelligence and acceptable behaviour, and in certain instances intervened where individuals were deviating from the norm (Miller & O'Leary 1987). This active intervention in the lives of individuals was intended to be a way of enhancing the resources of the nation.

Similarly scientific management was aimed at eliminating inefficiencies in the firm. Taylor (in Miller & O'Leary 1987: 251) pointed out that whilst the wastage of natural resources such as forests was visible, wastage of human resources was not. It would be the aim of scientific management to identify and eliminate waste caused through inadequate human action and social organisation.

4.2. The period including the two World Wars ($\pm 1914 - \pm 1945$)

4.2.1 Background

A merger wave in the United States around the turn of the century created huge vertically integrated firms (Loft 1991:22). Examples of these are General Electric, American Tobacco, National Biscuit and Du Pont. By World War I, the modern business enterprise had come of age (Chandler 1977:455), (Kaplan 1984).

According to Loft (1991:34-35) cost accounting played an important role in enabling the government of the United Kingdom to control ammunition factories. By the end of the First World War the Ministry of Munitions controlled over 3,5 million workers and it had become the biggest operation in the world of its time. Some factories were taken over by the government, but in most instances the original owners were retained. The prices were fixed at cost plus a profit margin, making costing systems important for the manufacturers as well as the government who needed to review and analyse these costs.

During the 1920s the general public first began buying corporate securities (Chatfield 1977:129). Accountants became anxious to produce objective, verifiable and conservative figures to satisfy the requirements of the capital markets. In many instances management and financial accounting were merged into a single system which resulted in a short-term business outlook as well as

an over reliance on historical information for process control. Johnson and Kaplan (1987) argued that information in this format was too aggregated and too late to be of much value to management. They suggest that management accounting lost its relevance during this period when it became the captive of financial reporting.

4.2.2 Specific developments

Subsequent to the 1920s managers employed cost accounting not only in protecting assets and controlling expenditure but also for the purpose of decision-making. According to Chatfield (1977:176) the focus moved from accumulating accurate cost information to deciding on the importance and usefulness of specific figures.

Neo-classical economists were the first to refer to the concept of relevant costs for decision-making, towards the end of the nineteenth century. WS Jevons (in Chatfield 1977:177) pointed out that in commerce "bygones are forever bygones". He maintained that asset values depended on future utility rather than historical cost. In 1923 a United States economist, J. M. Clark (1923:175-203) argued that there could be no unique concept of cost (Scapens 1991:13). However, economic theories were not written for or read by accountants and businessmen (Chatfield 1977:177). Except for the fact that they were unaware of these principles, the technique for isolating controllable costs for analysis eluded accounting practitioners (Chatfield 1977:177) and the idea was only popularised among accountants during the 1960's (Scapens 1991:13).

Some of the earliest applications of cost-volume-profit analysis were made in the field of railway economics in 1850 by Lardner an Irish mathematician and in 1887 by Wellington and American civil engineer (Chatfield 1977:177). The first descriptions of the break-even chart appeared in 1903 by an American engineer and in 1904 by Mann a Scottish accountant (Chatfield 1977:178). It was only in 1922 though that Williamson illustrated that the break-even point could be calculated mathematically and in the 1930's these descriptions began to appear in the accounting literature (Chatfield 1977:178).

Flexible budgeting can be ascribed to the work of Williams who addressed the treatment of semi-variable cost in 1922 and a group of Westinghouse engineers who in 1928 devised what they called a flexible budget (Chatfield 1977:179). Direct or variable costing was first proposed as an alternative accounting method by Harris in 1936 (Chatfield 1977:179).

Two other management accounting techniques, namely budgeting as well as return-on-investment (ROI) were developed during this time (Loft 1991:22), (Kaplan 1984:397). The purpose of budgeting was to co-

ordinate and balance the internal flow of resources, from materials to sales, whilst ROI was designed to control the capital investment. Until then the efficiency of the use of capital had been largely ignored. In the same way that measures like cost per labour hour were used to manage the efficiency of labour, ROI was employed to find the most efficient use for capital. After the First World War, some of the huge firms became multi-divisional, and management accounting played a key role in ensuring that the divisions worked together to ultimately further the objectives of the organisation as a whole (Loft 1991:23). ROI was used to evaluate the performance of the managers, who were now held responsible for the efficient use of capital in their divisions (Kaplan 1984:380).

4.3 Period after the Second World War to 1970 (\pm 1945 - 1970)

4.3.1 Background

In the 1950s and 1960s western industrialised countries like the United Kingdom and the United States of America experienced limited competition in the international markets. There was little need for innovation in respect of products or production processes (Ashton, Hopper and Scapens 1991:1). This secure position resulted in companies being primarily concerned with internal matters such as production capacity.

Ashton *et al.* (1991:4) describe the late 1950s to the mid 1970s as the heyday of management accounting research. Much of the contemporary textbook material is derived from research undertaken during this period.

During this period there was an increasing awareness of the view that cost information should be appropriate to the needs of users, in particular managers (Scapens 1991:8). A study by Simon (1959) had a profound effect on the perceived role of accounting information. The study identified three uses of accounting of importance to managers namely as a scorecard, for attention directing as well as for problem solving. All these uses had to do with the management of organisational performance.

This change in emphasis from *cost* accounting to *management* accounting was also recognised by the professional accounting organisations. The United Kingdom Institute of Cost and Works Accountants changed the name of its journal from *Cost Accounting* to *Management Accounting* in 1965 and its name to the Institute of Cost and Management Accountants in 1972. In the United States of America the National Association of Cost Accountants changed its name to the National Association of Accountants in 1957 (Freedman 1992).

4.3.2 Specific developments

The research during this period mainly focused on profit maximising models like linear programming, cost variance investigation models, transfer pricing, performance evaluation and opportunity cost models. All these models were based on neo-classical economic theory (Ashton *et al.* 1991:4, Scapens 1991:13).

An early use of the mathematical analysis in management was cost-volume-profit (C-V-P) analyses. Although this model was initially based on deterministic assumptions, Jaedicke and Robichek (in Scapens 1991) explored the possibility of allowing for uncertainty. Jaedicke (in Scapens 1991) was also an important contributor to the extension of C-V-P analysis to allow for a multiproduct firm with numerous constraints. He illustrated that an optimal mix can be determined by means of linear programming. By the end of the decade the simple model had been extended to allow for multiple products and multiple constraints. These developments took place as a result of and sometimes alongside the subject of "operational research", and although the boundary between these two subjects is unclear, linear programming could also be regarded as operational research (Scapens 1991:14).

The classification of costs as direct or indirect, fixed or variable, period or product was important for cost accounting but became increasingly important with the development of management accounting. The techniques to distinguish between these costs included scatter graphs and regression techniques that were widely used in practice in the 1960s (National Association of Accountants in Scapens 1991:15).

According to Kaplan (1984:402) the residual income extension to the return-on-investment criteria emerged during the post World War II period. He suggests that although it is generally attributed to the General Electric Corporation it can be traced back to Clark (1923), among others.

Although Emmerson already stressed the importance of distinguishing between controllable and uncontrollable variances for purposes of control in the early decades of the twentieth century (Drury 1996:832), it was in the late 1950s and early 1960s that responsibility accounting developed rapidly. Its development played an important role in the movement from cost control to managerial control (Scapens 1991:17).

Further advances during this period in respect of standard costing include the application of the linear programming formulation of the typical product-mix decision to the calculation of variances. Opportunity loss variances as well as

more sophisticated variance investigation models by means of statistical control procedures, were also introduced (Samuels 1965 in Scapens 1991).

Although capital budgeting only became popular during the 1950s, some of the underlying concepts like compounded interest date as far back as the Babylonian times. Knowledge of compounded interest was also a prerequisite for the development of scientific life insurance during the seventeenth and eighteenth centuries (Chatfield 1977:181)

Marshall (1930:352) already established a framework for capital budgeting in 1890. According to him the return on investment should exceed the outlay by an amount which increases, at compounded interest, in proportion to the time of waiting. Chatfield (1977:183) ascribes the fact that accountants only became interested in discounted cash flow techniques when more businesses started to adopt the techniques in the 1950s, to the accountant's preoccupation with historical and external reporting as well as a highly specialised education which seldom included economic theory.

During the 1960s the systems approach to management accounting was introduced. This approach breaks down barriers among traditional scientific disciplines and attempts to view problems as a whole. In terms of this view management accounting should be seen in its total organisational context, and should acknowledge the significance of complexity in the interrelations among the various parts of an organisation (Puxty 1998:31-51). This stands in contrast with the abstract neo-classical approach, which examines decisions in isolation (Oser and Bruce 1988).

A considerable amount of research in respect of the relationship between the behavioural sciences and management accounting was carried out during the 1960's. It indicated that responsibility accounting and other instruments for control, such as budgeting and standard costing could have negative motivational consequences, but in spite of these findings the effect on management accounting's conventional wisdom was minimal (Scapens 1991:19, Kelly and Pratt 1992).

4.4 The period post 1970

4.4.1 Background

The world economy changed profoundly during the last three decades of the twentieth century. Organisations had to face dramatic changes in the business environment, including changes in the competitive environment, new trends in manufacturing systems and transformations in the information world.

For a variety of reasons, including the deregulation of markets, improved international transport and improved communication systems, international competition became more vigorous during the 1970s (Drury 1996:21). This resulted in increased pressure on organisations to improve the quality and efficiency of their operations and to focus on customer satisfaction (Drury 1996:22). Organisations turned to advanced manufacturing technologies, such as robotics, computer aided design (CAD) and flexible manufacturing systems (FMS) to meet these demands. These changes revolutionised the manufacturing floor and dramatically changed manufacturing cost behaviour patterns: the direct labour and inventory components of product costs decreased, while overheads such as depreciation, engineering and data processing costs increased.

Managers required more up-to-date and concise information, formatted to assist them in taking the right decisions. However, Berliner and Brimson (1988:1) observed that the (then) existing cost accounting and cost management practices did not adequately consider the aforementioned changes regarding the factory floor and cost behaviour patterns and therefore did not meet these needs.

It is in the information world that the most remarkable changes are observed. The society changed its emphasis from producing material goods to focusing on information-processing activities (Carnoy, Castells, Cohen & Cardoso 1993:5). In the new global world economy investment, production, management, markets, labour, information and technology are organised across national boundaries and information technology is indispensable in the face of these transformations (*ibid.*).

During this period of change, accountants continued to play an important role in industry. In 1997, over 80% of Britain's leading companies had at least one accountant on the board of directors, and around a fifth of their chairpersons, managing directors and directors were members of the accountancy profession (Anderson, Edwards & Matthews 1997:30-31). The estimated total number of accountants in industry in the United Kingdom increased from 39 960 in 1971 to 94 917 in 1991 (*ibid.*).

4.4.2 Specific developments

During the last thirty years of the previous century a number of diverse developments took place under the auspices of management accounting. These include strategic management accounting, further refinements of the systems approach and contingency theory, the interpretive perspective as well as the radical critiques.

In little more than a decade a new sub-branch of management accounting evolved. Strategic management accounting, or accounting for strategic positioning, as referred to by Roslender (1996:536), derives its name from its endeavour to generate accounting information which supports attempts of senior management to achieve and sustain a strategic position in the market place (Shank and Govindarajan 1989:xi).

Roslender (1996:536) views the development of strategic management accounting, in terms of a succession of three phases. Initially a number of new techniques were promoted, including activity based costing (Cooper & Kaplan 1988), backflush accounting (Bhimani & Bromwich 1991) as well as throughput accounting (Galloway and Waldon in Du Plooy 1998). These were followed by life cycle costing (Berliner & Brimson 1988), strategic cost analysis, the value chain and value engineering (Shank & Govindarajan 1989) as well as target costing (Hiromoto 1988). The second phase can be identified as the development of generic approaches such as activity based management (Cooper & Kaplan 1991) and strategic cost management as well as continuous performance improvement (Turney & Anderson 1989). Total quality management can be added to these approaches. The third phase is described by Roslender (1996: 538) as integrated modes of performance measurement for the strategic process, such as the balanced scorecard advocated by Kaplan and Norton (1992).

The systems approach that is referred to in 4.3.2, continued to develop with the most famous advancement probably in the area of contingency theory. This theory is based on the premise that there is no universally suitable accounting system for all organisations in all circumstances (Otley 1980:413). Different organisational principles are appropriate under different environmental circumstances and within different parts of the organisation (Hopper and Powell 1985).

During the 1980s the interpretative approach gained ground as a method for researching the perceptions of the individuals that are affected by management accounting information. According to Hopper and Powell (1985:446), people constantly create their social reality in interaction with others and the aim of the interpretative approach is to analyse such social realities in the ways in which they are socially constructed and negotiated. In 1994 Scapens suggested an approach which has interpretative characteristics. He referred to it as an institutional framework. He views accounting practices as routines that enable organisations to reproduce and legitimise behaviour, and to achieve organisational cohesion. Institutions are patterns that define what is proper, legitimate and expected modes of action in a group or a society. Management accounting can be viewed as a routine feature of organisational behaviour in

most firms. Budgets and reports, for example, are prepared in a regular and routine fashion (Scapens 1994).

Another management accounting movement that gained momentum during the 1980s are the radical developments (Puxty 1998). Radical theories question the status quo and the current nature of society, including the distribution of power and class relationships (Hopper and Powell 1985:450). These developments include Neimark and Tinker's dialectical approach to social analysis (1986), the labour process approach (Hopper, Storey and Wilmott 1987, Hopper and Armstrong 1991) as well as critical accounting theories (Miller and O'Leary 1987, Hoskin and Macve 1988, Roslender 1990). The deconstruction view (Arrington and Francis 1989), structuration theory (Macintosh and Scapens 1990) and the societal approach (Ramanathan 1976, Belkaoui 1993) can also be categorised as radical approaches.

4.5 Summary of the developments of management accounting

The vast majority of the management accounting advancements that occurred between the period of its origin and 1970 have been along functional lines. The costing techniques developed during the period before and during the Industrial revolution, the scientific management techniques for control and efficiency as well as the models developed for decision-making during the post First World War years, belong to the functional framework. Most of these techniques and models were developed to aid management in achieving predetermined objectives. The social world within which organisations were operating was accepted as realist and positive and employees were deemed to be rational and controllable.

In the period after 1970 alternative modes of enquiry of management accounting began to evolve. Several radical approaches were suggested that rejected the *status quo* and called for a fresh unbiased approach to studying management accounting. Development also occurred in the area of the interpretative approach to management accounting research.

5 Conclusion

There seems to be a balanced view regarding the origin of management accounting. Two major schools of thought subscribe to the functional framework while three other (less prominent) points of view approach the origin from a radical frame of reference.

However, the developments and advancements in the area of management accounting since the origin until the 1970s has been colonised by the functional

paradigm. Subsequent to the 1970s, significant developments have occurred within the radical paradigm and as regards the interpretative approach, a limited amount of progress has been made.

Another observation based on the study is that management accounting research and development seem to follow trends. Examples of these are the focus on information for control and efficiency during the scientific management era, the emphasis during the inter-War years on the responsible use of capital as well as short term decision-making, and the prominence awarded mathematical modelling during the post-World War II period. It is also evident that the last two decades have witnessed a remarkable response to the criticism of irrelevance levelled against management accounting in the late 1980's. There has been a plethora of new techniques and models providing information to improve the strategic position of organisations. It is not entirely clear what these trends can be ascribed to and might include interrelationships with general economic, sociological, political or academic development, but conclusion in this regard requires further research.

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