ACTIVITY–BASED MANAGEMENT ACCOUNTING IN THE HEALTH CARE SECTOR, WITH SPECIFIC REFERENCE TO PRIVATE HOSPITAL GROUPS IN SOUTH AFRICA

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BLOEMFONTEIN
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DECLARATION WITH REGARD TO INDEPENDENT WORK

I, ANA CRISTINA GONÇALVES CUNHA, hereby declare that the research project submitted by me in the fulfilment of the degree MAGISTER TECHNOLOGIAE: COST AND MANAGEMENT ACCOUNTING at the Technikon Free State is my own independent work and has not been previously submitted by myself or any other person in fulfilment of any qualification.

Gunha

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List of abbreviations

A list of the abbreviations as used in the text is listed in alphabetical order below.

ABC	Activity-based costing
ABB	Activity-based budgeting
ABB	Activity-based budgets
ABCM	Activity-based cost management
ABM	Activity-based management
ABMA	Activity-based management accounting
BHF	Board of healthcare funders
BPR	Business process re-engineering
GAAP	Generally accepted accounting practice
HASA	Hospital association of South Africa
HMO	Health management organisations
JIT	Just-in-time
MASA	Medical association of South Africa
RAMS	Representative association of medical schemes
TOC	Traditional overhead costing
TQM	Total quality management

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1. Introduction

This chapter includes the necessary background and introduction to the study. The statement of the problem, hypothesis, aim of the study and the research methodology are outlined.

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1.1. Background and introduction

The health care sector, worldwide, is characterised by increasing patient loads, more complex procedures and ever-increasing medical costs, with the cost of hospitalisation being the predominant cost factor absorbing the most resources. Leyenaar (1997:14) maintains that the health care market has shifted from revenue to a cost focus.

Increases in private hospital cost of between 13 and 15 percent at the beginning of 1999 were, according to Bisseker (1999:1), not justified, especially in the light of the healthy financial results achieved by many of the listed private hospital groups.

Administrators of large medical aid schemes and of managed care companies are having great difficulty in explaining these increases to their members. Member contributions increased by as much as 20 percent, this despite promises that managed care would bring these costs under control (Bisseker, 1999:1).

Another problem facing South African hospitals is currency related. Since the beginning of 1999, the Rand has lost a great deal of ground against foreign currencies, making it very expensive for hospitals to purchase any medical equipment from the overseas market. Hospitals purchase much of their technologically advanced equipment and medication from foreign countries and with the depreciating Rand, these items become even more expensive. The hospitals must bring this currency component into their pricing policies. Another factor contributing to the recessionary climate existing in South Africa is one of medical inflation. Medical inflation rates have, over the past few years been much higher than the average inflation rate.

An increased emphasis on cost management and cost containment in hospitals, together with managed health care, has created an urgent need amongst health care providers for relevant, accurate, timeous and meaningful cost information (Williams, 1997:16).

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In this regard Canby (1995:51) is of the opinion that by tracing healthcare activities and costs back to the events that generate and cause the cost, and by focusing on the process that drives cost, a more accurate measurement of financial information and performance is obtained. This, in turn, will enable private hospital groups to make necessary price changes only if these changes are justified by the information obtained from the new system.

The health care industry may use the ABC technique, developed by manufacturing organisations to enhance their profitability, eliminate unnecessary costs and plan for change (Schuneman, 1997:1). This technique, which identifies the relationship between the activity and the source needed to complete it, can thus also be applied successfully to the medical practice.

Hospital management systems may use all the components associated with ABMA to effectively control, plan, administer and monitor the activities and resources in the hospital.

1.2. Statement of the problem

- **Accurate information**

The most challenging problem facing the hospital industry is that providers do not possess clear and accurate information to determine the costs of their services. Funders, predominantly medical aid societies, pay the providers a certain amount for particular services provided, and due to the lack of accurate cost information, the providers are left in a situation where they do not know if payment by funders is sufficient for the services provided.

- **Pricing**

Pricing which historically has not been a key factor in hospital marketing is now an important criterion through which hospitals compete for business from large organisational buyers, such as managed health

care organisations (i.e. health maintenance organisations, and preferred provider organisations), third party insurers and employers (Williams, 1997:16).

This price competition and the resulting importance of accurate cost information make the need for a relevant cost system urgent in most hospitals. In an environment where direct costs such as the cost of a specific service is billed to the patient, indirect costs or overheads of the entire hospital operation (including individual departments) are typically accumulated and divided by the total number of patients' days to determine the per diem cost. Using this system, hospitals assume that the overhead cost per patient, per day is the same irrespective of the patient type, level of care, procedure being performed or the length of stay (Udpa, 1996:83).

1.3. Hypothesis

A private hospital group using ABC in a cost system and ABMA can attempt to improve the management process of the hospital with regards to the costing of activities and the recovery thereof.

1.4. Aim of the study

Main objective:

The main objective of this study will be to review the current situations in the health care sector, with the emphasis on the current costing systems in use. The current costing system used in the private hospital groups under review will be detailed in an attempt to improve profitability.

Secondary objectives:

- A secondary objective will be to determine whether ABMA can assist management of private hospitals to obtain clearer, timeous and accurate cost information, enabling it to determine the costs of their services in a more efficient and accurate way.

- Results and recommendations, based on the outcome of the questionnaires that were sent out, will be put forward in the study. By view of a scenario, an ABMA situation will be sketched.

1.5. Field of research

For the purpose of this study, all the private hospital groups in South Africa were contacted. In co-operation with HASA, ten private hospital groups in South Africa were identified.

All the private hospital groups were contacted telephonically and a questionnaire and cover letter were forwarded electronically to each of them. Of the ten private hospital groups contacted, only six groups were willing to participate in this research.

1.6. Research methodology

1.6.1. Literature study

In this study, as much as possible available and relevant literature, which included books as well as relevant magazine articles, were collected and used.

The origins of cost accounting will be traced, from its roots in a historic perspective, to the current costing system used in a modern business environment. This perspective will start at the early fourteenth century, highlighting the Industrial Revolution, the two World Wars, and will end at the twentieth century, where the business environment faces its most challenging problem yet; to provide a high quality product or service, while keeping relevant costs down.

After tracing the cost accounting origins, the focus turns to the traditional / conventional costing systems currently being used by both the manufacturing and service sector. Special attention will be paid to the subject of overheads, with special reference to the allocation of overhead costs to a product or service.

ABC, ABM and finally ABMA will be treated in detail. Familiarity with the concepts and components of this new costing system will be gained through the study of relevant and existing material available on the subject.

1.6.2. Empirical research

In order to carry out the empirical section of this study, close co-operation with the private hospital groups will be necessary. A detailed questionnaire will be circulated to all the private hospital groups in South Africa. Questions surrounding managerial aspects, including management activities, planning, control and decision-making form part of this questionnaire.

After the completed questionnaires have been processed, final recommendations and conclusions will be drawn and included in the study. A scenario for ABMA will also be sketched.

1.7. Chapter layout

1.7.1. Chapter 1: Introduction

This chapter includes the necessary background and introduction to the study. The statement of the problem, hypothesis, aim of the study and the research methodology are outlined.

1.7.2. Chapter 2: The evolution and development of cost accounting

The evolution and development of cost accounting is detailed in this chapter. Traditional cost accounting systems in both manufacturing sectors and service sectors, and overhead costing are discussed. Cost accounting terms are also clarified. Illustrative examples are included to highlight traditional costing methodology.

1.7.3. Chapter 3: Activity-based costing

ABC as a continuously developing costing system is sketched. Relevant aspects critical to the successful implementation of ABC in an organisation will also be highlighted in this chapter. Special attention is drawn to the steps critical to the implementation of ABC.

1.7.4. Chapter 4: Activity-based management

The distinction between ABC and ABM is drawn in this chapter. ABM in action, including activity analysis and value chain analysis is highlighted. The implementation of ABM, and overcoming the obstacles encountered in implementation are also detailed.

1.7.5. Chapter 5: Activity-based management accounting

The most important aspect in activity-based techniques - namely ABMA, is presented in this chapter. Special focus will be laid on management and the management process. Performance measurement and the role of management accounting in performance measurement are also featured here.

1.7.6. Chapter 6: Management accounting in private hospital groups in South Africa

In this chapter specific mention is made to the current situation in the private hospital sector. The field of study is, once again, highlighted. The private hospital groups and their portfolios are also sketched.

1.7.7. Chapter 7: Analysis of the questionnaire

The questionnaire, which was sent out to the private hospital groups, is analysed in this chapter. The responses as captured by the answering of the questionnaires will be outlined here.

1.7.8. Chapter 8: Conclusions

The findings from the analysis of the questionnaire are summarised in this chapter. Conclusions reached from the analysis of the questionnaire are also presented in this chapter.

1.7.9. Chapter 9: Recommendations

Recommendations regarding the application of management accounting principles and techniques in respect of ABMA are presented here. A scenario in support of ABMA is also sketched.

1.7.10. Annexure

The annexure in support of the research are attached here.

1.7.11. Bibliography

2. The evolution and development of cost accounting

The evolution and development of cost accounting is detailed in this chapter. Traditional cost accounting systems in both manufacturing sectors and service sectors, and overhead costing are discussed. Cost accounting terms are also clarified. Illustrative examples are included to highlight traditional costing methodology.

2.1. Introduction

Cost accounting as seen in our modern business environment, is in itself not a new concept. The need for cost accounting and record keeping can be traced back to the early fourteenth century, where growth occurring in the domestic industry (work done at home by artisans for capitalists) necessitated some form of industrial cost accounting. Capitalists needed to control the flow of materials to and from workers, to relate amounts that needed to be paid to workers to individual productivity and to check profitability of different activities (Glad and Becker, 1994:2).

Information is vital in any management process, and accounting is one of the major information systems within any organisation. Therefore all interested parties must gather a sound understanding of accounting in order to fulfil their respective roles within the organisation in a responsible and competent way (Glautier and Underdown, 1997:397).

This concept of information is applicable to all types of organisations: manufacturing, merchandising (wholesale and retail) and service organisations. There is no particular management process that can apply for all types of organisations. The management process will be based on the particular needs and characteristics of each individual organisation.

In this chapter, an introduction into the background of cost and management accounting, from its humble beginnings to the modern sophisticated technology cost accounting has developed into, will be sketched.

2.2. Defining cost and management accounting

It is of great importance from the onset of this chapter to gain an understanding of the definitions and differences between cost and management accounting terms. As these terms appear and are used frequently

in this chapter (and in the rest of this study), an explanation of the necessary terms will form the first part of this section.

2.2.1. Cost

Glautier and Underdown (1997:413) describe the term cost as the monetary measurements of the efforts that an organisation has to make to achieve its objectives. Cost plays an important role in the management process; this enables it to carry out its planning, control and decision-making functions.

Barfield *et al.* (1997:115) describe cost as being a word frequently used in an organisation which reflects a monetary measure of the resource given up to obtain some kind of objective, usually in the form of acquiring goods (product) or delivery of a service.

Faul *et al.* (1997:10) describe cost as expenses that are economically unavoidable and technically essential for the production of a product or service. Each expense has a norm, and if this expense satisfies this norm, then the expense is regarded as a cost. The authors continue that care should be taken so that known wastage is not regarded as cost.

From the various definitions given by the authors, the word cost can be summarised as a sacrifice made in monetary form in which something is given up or done in order to achieve a desired outcome or goal. This outcome can be measured as the ultimate product or service, which is offered and taken up by the customer base of any organisation.

2.2.2. Cost accounting

Batty (1978:1) describes cost accounting as the comprehensive term, which describes the techniques, systems, conventions and principles employed by a business or organisation to plan and control the

utilisation of its resources. These resources will include assets, facilities and employees, who in conjunction with any material and service will be consumed to deliver the ultimate product or service.

Maher (1997:815) sees cost accounting as a field of accounting that records, measures and reports all relevant information pertaining to the costs of a product or service. Polemeni *et al.* (1991:3) describe cost accounting as being primarily concerned with the accumulation and analysis of information relevant for internal use by managers for planning, control and decision-making within the firm.

Rayburn (1996:4) in turn, describes cost accounting as defining, identifying, measuring, reporting, and analysing the various elements of direct and indirect costs associated with producing and marketing goods and services. Cost accounting, also measures performance, product quality, and productivity.

From the above, the conclusion is drawn that the main objective of cost accounting is communicating both financial and non-financial information to management for planning, controlling, and evaluating resources. Cost accounting can be summarised as the process of compiling the cost of producing certain products, providing certain services or undertaking certain activities.

Cost accounting is also seen as the measuring and reporting of financial and other information related to the organisation's acquisition or consumption of resources. This information is relevant for managers who, in turn, use this information for planning, control and decision-making functions.

2.2.3. Financial accounting

Financial accounting is concerned with financial statements for external use by those who supply funds to the firm and by other persons who may have vested interests in the financial operations of the firm (Polemeni *et al.*, 1991:3).

Faul *et al.* (1997:3) describe the purpose of financial accounting as providing financial information about the enterprise by means of general-purpose financial statements, (such as the income statement, balance sheet and cash flow statements). Mainly interested parties who do not take part in the day-to-day management of the enterprise, (parties who are themselves primarily outside the enterprise), use these statements.

Financial accountants prepare information for external parties. This information includes the status of assets, liabilities and equity. Rayburn (1996:5) explains that financial accounting also reports on the results of operations, changes in owner's equity, and cash flow for an accounting period. Creditors, present owners, potential owners, employees, and the public at large would be interested in the information supplied by financial accounting.

Financial accounting can thus be seen as financial reporting based on historical data, for external users. The financial information is limited to the operations of the organisation as a whole, with little reference being made to the operations of the individual product lines and divisions. GAAP governs financial accounting. GAAP places emphasis on objectiveness, restricting personal interpretations of those responsible for the preparation of the financial statements.

2.2.4. Management accounting

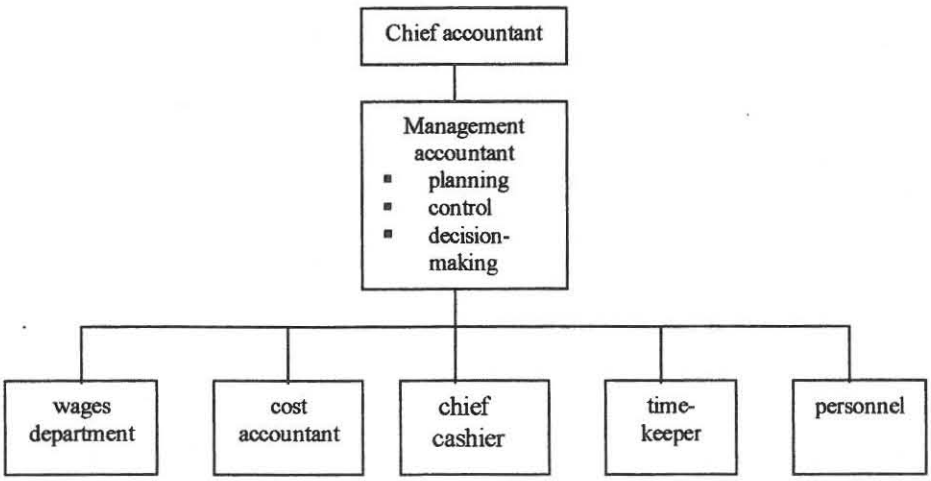
Barfield *et al.* (1997:3) describe management accounting as focusing on the informational needs of an organisation's internal managers. This need is related to the planning, control and decision-making functions of these managers. Some management needs are satisfied by historical, and monetary information based on GAAP, while other managers require forecasted, qualitative, and frequently non-financial information that has been developed and computed for specific decision purposes.

Management accounting measures and reports financial information in addition to other types of information that assist managers in fulfilling the goals of the organisation (Horngren *et al.*, 2000:2). Maher

(1997:818) further explains management accounting by emphasising the use and preparation of cost and related data for management use in performance evaluation and decision-making.

Management accounting organisation

(Batty, 1978:17 Adapted)



Management accounting is concerned with three primary functions. These include planning, control and decision-making. Planning is seen as the cornerstone to effective management. Effective management is in turn a tool frequently used by managers to make predictions, with reasonable precision, on the key variables that affect a company's performance and conditions.

a) Planning function

Barfield *et al.* (1997:615) emphasise that planning (especially in financial terms) is important when future conditions are expected to be approximately the same as the current ones, but is of critical importance when conditions are expected to change.

Planning can be summarised as the formulation of objectives by organisational management, as well as its programmes of operation to achieve these objectives.

b) Control function

Control, the second main objective of management accounting, is specific steps, which an organisation's management undertakes to ensure that the organisation's objectives are achieved and its resources used effectively (Polemeni *et al.*, 1991:12).

Glautier and Underdown (1997:405) regard control as being closely linked to the planning function, in that control's purpose is to ensure that the firm's activities conform to its plans. Control is effected by means of an information feedback system, which enables performance to be compared with planned targets. Control is essential to the realisation of long-range and short-range plans.

Barfield *et al.* (1997:19) describe control as the exertion of managerial influences on operations so that the operations conform to plans. Setting performance standards or norms against which actual results can be measured is the fundamental process of control.

Control can be seen as a tool used by management accountants to assist managers in determining the relevant standards, performance is thereafter measured and compared to the standards. The management accountant's role here is to provide managers with timely, appropriate and accurate reports.

c) Decision-making function

The last important function of management accounting entails decision-making. Barfield *et al.* (1997:19) continue that using these standards, managers conduct performance evaluation to determine whether operations are proceeding according to plan or whether actual results differ significantly from those that were expected. If the latter case realises, adjustments to operating activities may be needed.

After performance is measured during the control process, managers must evaluate the efficiency and effectiveness of performances and activities. The successful accomplishment of the task would reflect effectiveness – whereas performing tasks to produce the stated yield at the lowest cost from resources used would reflect efficiency (Barfield *et al.*, 1997:19).

Wright (1994:295) introduces decision-making as a management accounting function, which is concerned with choosing the best alternative future course of action. It is future orientated, where past transactions or events have little relevance to management decisions, current or future, because those events cannot be changed. Management accountants will however reflect on past performance in order not to repeat mistakes of the past. Management cannot ignore the past completely while making these future predictions.

Management accounting strives to recognise what information management needs, why it is needed, and how to provide it in the most understandable and timely manner so that information can be used for useful decision-making. Managers often need information about activities that technically fall outside the production process, but are very relevant to production. Managers, according to Barfield *et al.* (1997:18) need information for decision-making about the following:

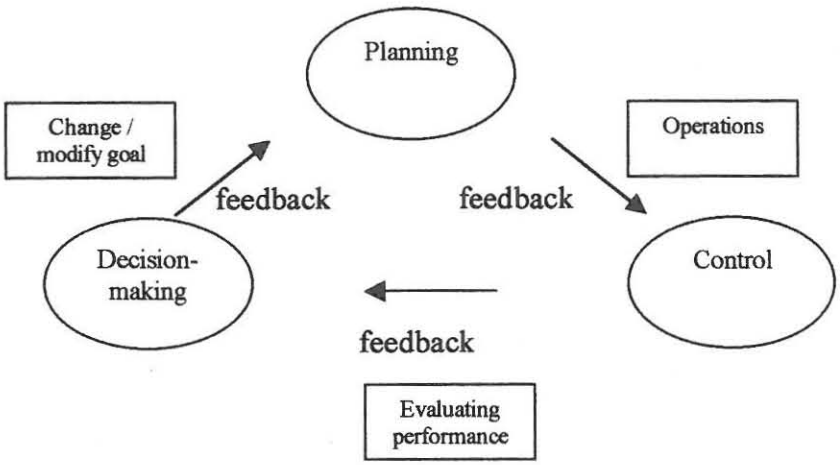
- Acquiring and financing production capacity,
- Determining which product/service to market,
- Pricing,
- Best method of delivery of product / service,
- Locating best property for production facilities, and
- Financing the cost of production.

Accounting can be summarised as a specialised information system. A service function is provided with the main aim of this service being to provide relevant information about the happenings in an enterprise to a wide variety of interested parties. Relevant information is seen as accounting information concerning the enterprise that is required by a particular party for the making of a particular decision.

In a modern international and competitively orientated economic and business environment, managers increasingly need relevant, clear and timely accounting information to carry out their functions of planning, control and decision-making, in order to make correct and enlightened decisions in the management of their enterprise, thereby striving to ultimately reach the goals and objectives of that enterprise.

Management accountants functions

(Glautier and Underdown, 1997:405 Adapted)



2.3. Evolution and development of cost accounting

The history of cost accounting, as reported by Glautier and Underdown (1997:5) illustrates how accounting is (was) a product of its environment and simultaneously a force for changing it. From today's perspective, three phases in the evolution of accounting may be identified as corresponding with its developing phases.

Financial and numerical record keeping of transactions, obligations and assets has been taking place for thousands of years. Glad and Becker (1994:1) maintain that the earliest record of accounting was found in the ruins of Babylon. Roman records contain data dating back to 200 BC, which include classifications of receipts and expenses into different categories (income and expenditure accounts).

Bille and Mcquaig (1995:4) record that around 3000 BC, the people of the Middle East developed the first known business records. These included mainly farm production, taxes and the exchange of goods records.

Helmkamp *et al.* (1989:3) agree that as a record-keeping process, accounting has evolved over many centuries to serve the changing social and economic needs of society. The authors also maintain that as early as 3600 BC clay tablets were used in the Babylonian Empire to record various facts. These records included lists of events as they occurred or lists of goods belonging to an individual estate or temple.

These early recordings contained mostly inventories of goods and debts. Later recordings began to reflect a concern for computing profits and losses from different ventures. Helmkamp *et al.* (1989:3) believe that church officials and governments during the Middle Ages were also responsible for additional advances in record keeping.

The Middle Ages heralded the development of accounting in instances of government and church officials. The first double entry system, which seemed to work excellently, dates back as early as 1340. The three phases Glautier and Underdown (1997:5) mentions as development phases in accounting may be summarised as follows:

- Stewardship accounting,
- Financial and cost reporting, and
- Management accounting.

2.3.1. Stewardship accounting

- Stewardship accounting has its origins in the function accounting served from the earliest times in the history of our society of providing owners of wealth with a means of safeguarding it from embezzlement.

Stewards were employed by wealthy men to manage their property. Periodical accounts of their stewardship were rendered to their masters. In essence, stewardship accounting involved the orderly recording of business transactions. Records of stewardship accounting were found dating back as early as

4500 BC. This record keeping function, known as bookkeeping was fairly primitive in those times (Glautier and Underdown, 1997:5).

The Holy Bible also has proof of this early development in stewardship accounting systems when references are made to a stewardship programme. In Luke 16:1-6, the following is written: *"There was a certain rich man who had a steward... The rich man said to the steward, 'give an account of your stewardship, for you are no longer to be my steward.' so the steward called all his masters' debtors to him and he said to the first. 'how much do you owe my master?' and the debtor said, 'a hundred measures of oil' so the steward said to the debtor 'sit down, take your bill and quickly write that you owe my master only 50 measures of oil' ".*

The accounting concepts and procedures being used today for the orderly and complete recording of business transactions have their origins in the practices employed by Italian City State merchants, during the early part of the Renaissance (Glautier and Underdown, 1997:5).

Helmkamp et al. (1989:3) maintain that modern accounting has its origins in the double entry book-keeping method developed by Italian merchants during the twelfth, thirteenth and, fourteenth centuries. The most important condition contributing to this development was the rise of trade between medieval Italian cities and the East.

The crusaders of the eleventh and twelfth centuries used ships to carry their supplies to the East and brought back spices, satins and other riches that served to increase demand for such items. As trade expanded, large amounts of capital were needed, this resulted in the formation of partnerships to share the risks involved in relatively long voyages and other ventures. These ventures and partnerships were influential in creating the need for the concept of a business entity as well as a method of determining profits and losses, and the double entry system was developed in response to these needs (Helmkamp, 1989:3).

It is almost common knowledge that early bookkeeping arose in the highly developed civilisations of Northern Italy in the fourteenth and fifteenth century. It was used by many merchants of the time in both Italy and in the Netherlands, and in Southern Germany, where the mercantile influence of the Italians was very strong (Davidson and Weil, 1978:2).

It was however, not until the end of the fifteenth century that the technique of this double entry bookkeeping art was systematically set down by the mathematician-monk Luca Paciolo (Davidson and Weil, 1978:2).

Edwards and Yamey (1994:1) describe Luca Pacioli – 'the father of modern accounting' as: *'A Franciscan friar: at various times, professor of Mathematics at the Universities of Perugia, Milan, Florence, Pisa, Naples and Rome: a good friend of Leonardo da Vinci, Piero della Francesca, Pope Julius II and the Dukes of Milano and Urbino: and the author of several books which influenced generations of Mathematics.'*

In his famous treatise **"Summa de Arthmetrica Geometrica, Proportioni et Proportionalita"**, published by monk Luca Pacioli in 1494, he advocated what was then known as the 'Italian Method of Accounting'. Subsequently the Italian Method became known as the double entry bookkeeping system (Glautier and Underdown, 1997:5).

It is however unclear whether stewardship accounting was based on this double entry system. What is clear, however, is that stewardship accounting played an important role during the period of commercial expansion in Western Europe that followed the Renaissance, thus characterising a new phase known as Commercial Capitalism (Glautier and Underdown, 1997:5).

Stewardship accounting is therefore associated with an enterprise's need to keep records of its transactions, how and where it invests its wealth and the debts that are owed to it (debtors) and by it (creditors) (Glautier and Underdown, 1997:5).

2.3.2. Financial and cost reporting accounting

- Financial and cost reporting is more recent in origin, it dates back to an era when large-scale business was made possible by the Industrial Revolution. Existing social frameworks were destroyed to make way for a new technology to handle a new era of accounting (Glautier and Underdown, 1997:5).

During the sixteenth, seventeenth and eighteenth centuries very little proof exists of any progress made in industrial accounting. Yet Davidson and Weil (1978:1-4) maintain that some sort of progress must have been made in England during this period because clear illustrations were found in James Dodson, a shoemaker's accounts, in 1750. The concept that Dodson applied in his shoemaking accounts is today known as job order costing.

Wardhaugh Thompson described this new process in England in 1777. He explained this process by using an example of the manufacture of thread-hosiery from flax. He showed how the costs of the finished product could be built up in a series of double entry accounts, kept in quantities and values, process by process. Thus there was a flow of values from the flax stock account through accounts for spinning, bleaching, dyeing, weaving, trimming, finally to emerge as a 'brown thread hose' at about '2s 7d' per pair (Davidson and Weil, 1978:4).

With the advent of the Industrial Revolution of the late eighteenth and early nineteenth century (and later through the Victorian times characteristic of the nineteenth century), cost accounting (costing) came into being and initially developed as a branch of accounting (Wright, 1994:1).

As the country that led the Industrial Revolution in Europe, England might have been expected to lead the way in the accounting for industries during the early nineteenth century. But surviving literature suggests that it was however France that produced a stream of advanced industrial accounting thinking. One English writer, Charles Babbage, a Lucasion Professor of Mathematics at the University of Cambridge from the

period 1828 to 1839, did however write a book called "**On the Economy of Machinery and Manufacturers**" (Davidson and Weil, 1978:56).

In this book, Babbage called for the urgent need to devote more attention and time to the issues of costing. He called for the need to establish an accounting department, with clerks to pay the workmen, and to see that they arrive at their stations at the designated times. He further stated that the accounting department be in communication with the agents who purchase raw produce, and with those who sell the manufactured articles. (Davidson and Weil, 1978:56).

The words "Costing Renaissance" marked the last three decades of the nineteenth century in the English-speaking world. In the 1880's and 1890's a growing number of writers explained 'new costing ideas'. These ideas were however not really new, they had been discovered earlier, but forgotten (Davidson and Weil, 1978:10).

From this period onwards there was a great need for accurate costing techniques. The Industrial Revolution heralded the coming of the industrial costing. In the iron industry, the size of the business and the degree of integration had ceased to be limited by the availability of waterpower. The coal mining industry developed similarly: the sinking of deep shafts, construction of galleries, ventilation and pumping equipment, and transportation all called for large capital investments (Davidson and Weil, 1978:1-10).

The textile industry had been transformed by the introduction of power machinery. Moreover the development of railways, with the enormous volume of fixed equipment, had brought the problem of overheads to the fore. All of these factors contributed to the development of cost accounting (Davidson and Weil, 1978:1-10).

Close control of economic factors of production in the interest of new industrial efficiencies necessitates that labour, material and expenses of production (today overheads) be accounted for and costed like never

before. Wright (1994:4) believed that this was the birthplace of the specialism today referred to as cost and management accounting.

The specialist organisation today known as the 'Chartered Institute of Management Accounting' (CIMA), which was founded in 1919, the name then 'Institute of Cost and Works Accountants', clearly reflects its roots which lie in the 'nuts and bolts' of the works and factories spawned by the Industrial Revolution (Wright, 1994:2).

2.3.3. Management accounting

- Management Accounting is the last phase Glautier and Underdown (1997:5) refer to.

The advent of the Industrial Revolution is associated with management accounting. Industrial Capitalism of the eighteenth century presented a challenge to the development of accounting to serve industrial managers. There were some notable contributions made in this regard by Joseph Wedgwood, who developed costing techniques as guides to management decisions. The practice of using accounting information as a direct aid to management was not one of the achievements of the Industrial Revolution - this new accounting role had its place booked in the twentieth century (Glautier and Underdown, 1997:5).

In the latter part of the nineteenth century and early part of the twentieth century, cost accounting developments were mainly attributed to engineers, who established concepts such as production centres, idle capacity charges, analysis of cost into fixed and variable components, setting and using standards, and flexible budgeting (Glad and Becker, 1994:2).

Davidson and Weil (1978:11) describe the problem faced in the engineering industry during the period 1875 to 1900 as having contributed to cost accounting development. The engineering industry relied on the foreman for details of time spent by workers on each job and also often for details on the consumption of raw materials. A check on total wages was kept by using a time book, which was kept by the works

timekeeper, who recorded employees' arrival and departure times of the workers. Overheads were added to the prime costs of each job, usually by adding a flat percentage to labour costs or to prime costs.

The total of these three amounts-direct wages, direct material costs, and overhead costs- presented a figure that was accepted as the actual costs of the job. It was not long, however, before the concept of - actual costs came under critical review. It seemed as if all interested parties had a different view on actual costs. This caused a movement towards the term - standard costs instead of actual costs (Davidson and Weil, 1978:12).

As World War Two started, these costing techniques and the controls thereof were relaxed. This situation gave rise to a well-known phrase that 'a war economy is not a controlled economy'. Emphasis was placed on producing all products that were deemed necessary, usually on excessive scales, thus cost control was disregarded to a large extent (Glad and Becker, 1994:3).

The post World War Two era necessitated proper and complete record keeping as increased competition among industries increased. During this unstable period, Glad and Becker (1994:3) identified four major accounting concepts that were developed:

- Expense centre accounting,
- Creation of managerial accounting,
- Corporate goal focuses, and
- Performance measures.

The whole business environment changed after World War Two (1940's). Infrastructures and production capacity were re-built after the devastation of the war. Price fluctuations started in commodities. Improvements in communication and transportation gave rise to a more competitive business environment. Companies became specialists in the distribution and transportation of goods over long distances. A move was made towards greater mechanisation and automation. Machines and robots were developed to replace

people and soon computer aided manufacturing systems became commonplace in many manufacturing installations (Glad and Becker, 1994:6).

In conclusion, the advent of management accounting as set out in phase three of Glautier and Underdown (1997:5) demonstrated once again the ability and capacity of accounting to develop and meet changing socio-economic needs. Management accounting has contributed most significantly to the success with which modern capitalism has succeeded in expanding the scale of production and raising the standards of living of all involved.

Although much evidence is available that supports the evolution and development of manufacturing cost accounting, not much has been written in regards to the development of cost accounting in the service sector. It can only be concluded that service organisations were developed as support systems to the manufacturing and merchandising sectors. These services included among others, hairdressers, doctors, lawyers, banking, insurance, health care, transportation and telecommunication services.

Glautier and Underdown (1997:399) maintain that the service sector has increased in importance over the last few decades. The authors attribute this increased emphasis to the deregulation of many of these services, increased competition and benchmarking between the service industries, and changes in the overall business environment.

2.4. Traditional cost accounting systems – manufacturing sector

Johnson and Kaplan (1987:125) maintain that by 1925 American industrial firms had already developed almost every management accounting procedure that is known today. Managers developed accounting measures and control procedures to meet the demand for information about the efficiency and profitability of internally administered economic activities.

William Paton, seen as one of the century's most influential theorists, described in his 1922 treaties what became known as cost accounting's chief activity. He explained: 'the essential basis for work of the cost accountant- without it, there could be no costing - is to postulate that the value of any commodity, service, or condition, utilised in production passes into the object or product for which the original item was expended and attaches to the result, thus giving it its value' (Johnson and Kaplan, 1987:136).

Thomas Sanders, also an influential theorist of his time supported Paton's definition of cost accounting in his 1923 treatise. Sanders maintained that the outlays made for material, labour and manufacturing expenses are taken up and attached to the specific product or process to which they apply (Johnson and Kaplan, 1987:136).

In the previous section reference was made to developments made in cost accounting by the engineering industry from the period 1875 to 1900. This period in history was characterised by the development of the three cost elements that are still used significantly today.

2.4.1. Cost elements

Glautier and Underdown (1997:12) describe cost elements as a classification of the different types of expenditures that may be grouped together under a number of summary headings. Faul *et al.* (1997:20) describe these elements as material, labour and overhead costs incurred in the production of a product or in the delivery of a service. These costs comprise three elements:

Direct material costs

Direct costs are applied only to those costs that can be readily identified with the product. Glautier and Underdown (1997:414) describe direct material costs as those costs which can be directly associated with the finished product.

Davidson and Weil (1978:8-1) describe direct materials as the cost in manufacturing that cover raw commodities, fabricated parts and subassemblies. It represents a large investment of capital and a substantial percentage of the costs of the product in many manufacturing organisations.

Rayburn (1996:27) explains that direct material is any raw material that becomes an identifiable part of the finished product. Accountants also separately record and trace all direct material required in manufacturing to specific products.

Direct materials that can feasibly be identified directly with the product is defined by Maher (1997:31) as direct material costs. Furthermore direct materials are also called raw material.
In conclusion direct material can be defined as those raw materials that are physically incorporated into the manufacturing process. Direct material consists mainly of primary material. It usually forms an integral part of the end product and is usually in predetermined measurable quantities proportional to the volume of production usage.

The fact that material forms such a large component of capital invested, necessitates careful and accurate calculations surrounding all aspects of ordering, usage, payment and control of materials.

Direct labour costs

Direct labour costs are the costs associated with the workers who are engaged in the actual production process (Neuner and Deakin, 1977:10). Barfield (1997:124) describes direct labour as the time spent by individuals who work specifically on manufacturing a product (in the manufacturing industry, or performing a service in a service industry).

Rayburn (1996:28) explains that direct labour costs are the wages earned by workers who transform the material from its raw state to a finished product.

In conclusion, if an employee performs a task directly connected with the making of a product, his / her wage is considered to form part of direct labour. Direct labour refers to the cost of all labour physically expended on the manufacture of a product.

Factory overhead costs (manufacturing costs)

Factory overhead costs (overhead) are described by Glautier and Underdown (1997:414) as including all the remaining production costs, after direct material and direct labour have been added.

Polemeni *et al.* (1991:15) add that factory overhead costs form an inclusive cost pool used to accumulate indirect material, indirect labour, and all other indirect manufacturing costs which cannot be directly identified with a specific product. Examples of factory overhead include; rent, electricity, factory heat, factory depreciation, factory repairs and insurance, and factory equipment.

Rayburn (1996:28) explains that factory overhead is sometimes called manufacturing overhead or factory burden. The term indirect manufacturing overhead better describes this cost element. Factory overhead includes all production costs other than direct material and direct labour.

In conclusion factory overhead costs include all the remaining production costs, after direct material and direct labour costs have been determined. The primary characteristics of manufacturing overhead costs are that these costs cannot be attributed or traced to a particular product or service, but they are, in fact, incurred during the course of the production process.

Various problems are associated with overhead costs. These problems arise when pre-determined overhead bases are used for the allocation of factory overhead to production. This problem is discussed in detail later in this chapter.

From the above information, Neuner and Deakin (1977:11) sketch a schematic representation of a typical cost accounting cycle within a manufacturing industry.

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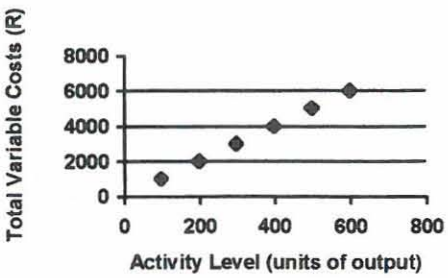
Resources	Production	Completion	Sales
direct material			
direct labour	*Work in process* →	*Finished goods* →	*Cost of goods sold*
overhead			

2.4.2. Cost behaviour patterns

Analysing and understanding cost behaviour patterns is an important function of the cost accountant. Knowledge of how costs will vary with different levels of activity (or volume) is essential for decision-making. The cost behaviour patterns that will be discussed are applicable within an organisation's relevant range. Polemeni *et al.* (1991:18) define an organisation's relevant range as that interval of activity within which total fixed costs and per unit variable costs remain constant.

Activity or volume, according to Drury (2000:25) may be measured in terms of units of production or sales, hours worked, miles travelled, patients seen, students enrolled or any appropriate measure of activity of any organisation.

Variable cost (Source: own research)



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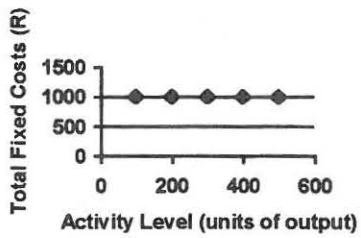
Variable costs

Variable costs vary in proportion to the volume of activity. Variable costs vary in direct proportion to the cost driver. Consequently total variable costs are linear and variable unit costs are constant (Drury, 2000:27).

Variable costs are those in which total costs change in direct proportion to changes in volume, or output, within the relevant range, while the unit cost remains constant. Polemeni *et al.* (1991:18) maintain that the department head responsible for incurring them controls variable costs.

A cost that varies in total in direct proportion to changes in activity is according to Barfield *et al.* (1997:117) a variable cost. Variable costs can be extremely important in the total profit picture of an organisation, because every time a product is produced and/or sold or a service is rendered and/or sold, a corresponding amount of that variable cost is incurred. Because the total variable cost varies in direct proportion to the change in activity levels, a variable cost must be a constant amount per unit.

Fixed costs (Source: own research)



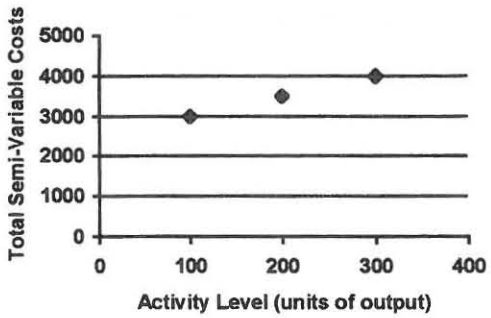
Fixed costs

Fixed costs remain constant over a wide range of activity for a specified time. Fixed costs stay the same despite changes in the cost driver. Consequently total fixed costs are fixed for all levels of activity, whereas unit fixed costs decrease proportionally with the level of activity (Drury, 2000:27).

Polemeni *et al.* (1991:19) describe fixed costs as those in which total fixed costs remain constant over a relevant range of output, while the fixed costs per unit varies with output. Beyond the relevant range of output, fixed costs will vary. Upper level management controls the volume of production and is, therefore, responsible for fixed costs.

A cost that remains constant in total within the relevant range of activity is considered by Barfield *et al.* (1997:118) to be a fixed cost. On a per unit basis, a fixed cost varies inversely with changes in the level of activity. This means that per unit fixed cost decreases with increases in the activity level, and increases with decreases in the activity levels.

Semi-variable costs (Source: own research)



Semi-variable (mixed) costs

This includes both fixed and variable components, that is, they vary, but less than proportionately. The cost of maintenance is a semi-variable cost consisting of planned maintenance which is undertaken whatever the level of activity (fixed), and the variable element which is directly related to the level of activity (variable) (Drury, 2000:27).

The fixed part of a semi-variable cost usually represents a minimum fee for making a particular item or service available. The variable portion is the cost charges for using the service.

Polemeni *et al.* (1991:22) explain semi-variable costs by illustrating an example; Most telephone service charges are made up of two elements: a fixed portion for being allowed to receive and make a phone call, plus an additional or variable charge for each phone call made. Telephone charges are relatively simple to separate into fixed and variable costs: however, in some instances, the variable and fixed component must be approximated.

Mixed costs have both a fixed and a variable cost component. On a per unit basis, a mixed cost does not fluctuate in direct proportion with changes in activity nor does it remain constant with changes in activity. Barfield *et al.* (1997:120) explain that electricity is an example of mixed costs. Electricity is computed as a flat rate charge (fixed portion) for a basic service, plus a stated rate for each kilowatt - hour of electricity used (variable component).

2.4.3. Overhead allocation methods - manufacturing sector

Drury (2000:45) defines overhead as expenditure, consisting of indirect material, indirect labour and other indirect expenses incurred in the manufacturing process. Overhead is those costs that cannot be directly attributed to the cost object (product, process, and service).

Davidson and Weil (1978:1-13) like Johnson and Kaplan (1987:53) also believe that the treatment of overhead costs were, in the 1880's, still quite crude and underdeveloped. In 1878, a Manchester public accountant, Thomas Battersby, published a book on the subject of overhead costs. Included in this book were some examples, of the time, of methods used. These included:

- Charging actual materials and wages, 100 percent on wages to cover overhead, and 25 percent on the total for profit.
- Charging a flat daily rate for the use of each machine or tool.
- Charging a percentage of wages for the use of tools and to cover all costs.

- A percentage added to prime costs (direct material and direct labour) for overhead, and a further percent added to the total for profit.
- A single percent added to prime costs to cover overhead costs and profit.

By 1907, D.C. Eggleston, a writer in the motor industry, advocated that not only one method should exist to allocate overhead costs to production. A combination of methods should be used. He suggested that a machine-hour basis should be used in a machine-related department / industry – in effect each method should be related to the nature of the operation carried out in every section or department within the organisation (Davidson and Weil, 1978:1-17).

A few years later, in 1916, Dr William Kent proposed a more elegant combination of overhead allocation method. He perceived that not one method could be used to appropriate all the costs incurred. He suggested that overhead costs could be classified into four types:

- Labour hours
- Machine hours
- The job
- Material used

He suggested the above classification and defined it as follows: The rate per labour hour would be the same for each job; the machine hour rate would be calculated separately for each class of machine – in effect, there would be a separate rate for each production centre; the job rate would be a flat charge per job; and the materials rate would be differentiated for different classes of materials and loaded directly onto the cost of the materials. With this remarkable thinking developed by Kent, the process of attaching overhead costs to production had been more or less brought to completion (Davidson and Weil, 1978:1-17).

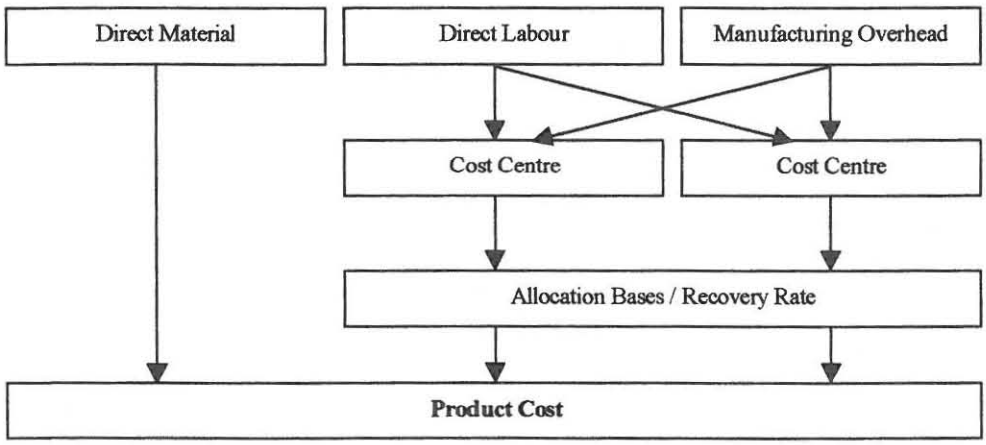
Glad and Dilton-Hill (1992:142) describe traditional costing of products as being primarily based on its classification as being direct or indirect costs. Materials are considered as being direct and are traced

directly to the product or service (via a bill of activity or other means). Direct labour is normally also considered to be a direct cost and related to the product or service (via an allocation basis such as direct labour hours).

The third cost component, overhead costs, is somewhat more complicated, thus causing the biggest problems to management accountants. Overhead is also related to the product or service, but in an indirect and often untraceable way. Overhead cost is allocated to production using appropriate allocation bases. The allocation basis most generally used in manufacturing organisations today is direct labour hours (Glad and Dilton-Hill, 1992:148).

Traditional costing approach

(Glad and Dilton-Hill, 1992:148 Adapted)



Cooper and Kaplan (1992:1) describe traditional costing systems as using volume driven allocation bases, i.e. machine hours, direct labour hours, direct labour costs, dollar sales, to assign organisational expenses to individual products and services. But these resource demands by individual products and customers are not proportional to the volume of units produced or sold. Thus these systems do not accurately measure the costs of resources used to design and produce products and to sell and deliver them to customers.

Barfield *et al.* (1997:163) identified three main reasons for indirect costs to be allocated to the cost object:

- To determine the full cost of the cost object,
- To motivate the manager in charge of the cost object to manage it more effectively,
- To compare alternative courses of action for management planning, control and decision-making

Today, due to increased use of automation, computerisation and robotics, overhead costs comprise a large portion of total production costs. Often in many non-labour intensive organisations, direct labour only makes up about 10 percent of total production costs. Allocating a very large cost component (overhead) of production using this very small component (direct labour) of production cost as a basis, will result in some sort of inaccuracy (Flesher, 1992b:38).

Most overhead costs vary in proportion to the product or service delivered and the complexity of the operation. For highly technological organisation, direct labour is not a cost driver for most overhead cost types. It must however be remembered that in some cases direct labour does constitute a large percentage of production costs, in these cases the predominant cost driver will (and can stay) direct labour hours. In these extraordinary cases the traditional allocation of overhead costs to a product or service will be appropriate (Flesher, 1992b:38).

Traditional costing methods today have the following tendency:

- Allocate indirect costs (overhead) based on direct labour hours or machine hours,
- Are out of date because technology has reduced relative contribution of labour costs to total production while the relative costs of overhead have increased.

2.4.4. Illustrative example – manufacturing sector

From the sketch as set out in the diagram on page 32, paragraph 2.4.3. and from the above explanation of overhead allocation as done in the manufacturing sector, an illustrative example can be formulated to

support calculations made using traditional costing methods. The following figures from a manufacturing concern are assumed:

Product XYZ:

Direct material – 100 000 kg @ R25.00 per kg

Direct labour – 25 000 hours @ R125.00 per hour

Overhead costs:

Total for the whole factory – budgeted R 2 000 000

Direct labour hours are used to allocate overheads to production

Total direct labour hours for the factory – budgeted 100 000 hours

Units produced – 500 000 units

In order to calculate the cost of one unit of Product XYZ the following:

Cost items include:

	Direct material – 100 000 kg @ R25.00	= R 2 500 000
	Direct labour – 25 000 hours @ R 125.00	= R 3 125 000
*	Overhead – 25 000 hours @ R 20.00	= R 500 000
	Total costs	= R 6 125 000 / 500 000 units
	Unit costs	= R 12.25

Note:

* - To allocate overheads to the product, budgeted manufacturing costs and the allocation basis are necessary to calculate a pre-determined overhead rate per hour.

= Total budgeted manufacturing costs / Product XYZ direct labour hours

= R 2 000 000 / 100 000 hours = **R 20.00 per direct labour hour**

(Source: own research)

2.5. Traditional cost accounting systems – service sector

While this discussion has centred round manufacturing activities, the production and service department concept is also applicable to non-manufacturing service organisations, such as health care systems (hospitals). For example, the units that provide direct patient care, such as surgery, is a hospital's direct production department. Service, support or ancillary departments are the administrative support departments, such as patient accounting and materials management departments (Rayburn, 1996:94).

Specialised services are costed through a procedure similar to job-order costing for manufacturing firms. The terminology used in these costing systems is often different from those used in manufacturing settings. In the health care systems, rather than jobs, costs may be assigned to 'cases'. Dyckman *et al.* (1994:367) maintain that although the terms are different, the need to assign costs to the firm's output is universal. As in manufacturing organisations, job orders for service organisations will generally include direct and indirect (overhead) costs.

Maher (1997:33) describes direct costs as any cost that can be directly related to a cost object. Indirect costs cannot be directly related to the cost object. In Rayburn's (1996:94) description of direct and indirect costs, he suggests that the distinction depend on the attachability or trace ability of the cost elements.

Rayburn (1996:95) continues that direct costs are not allocated to the costing centre because they arise within the department or job and are clearly traced to the cost centre. Indirect costs, on the other hand, serve two or more costing centres. A basis for allocating these indirect costs must be determined – no direct link exists between these costs and the cost driver.

Direct costs in service providing organisations consist primarily of labour costs. Direct materials usually form such a small part of the costs of the service provided, that often these costs are referred to as supplies and treated as part of overhead costs. Direct costs of labour are usually calculated by multiplying the number of hours of service provided by the hourly rate (Dyckman *et al.*, 1994:367).

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In a service industry, the cost classification that is applied for manufacturing industries - material, labour and overhead - is not appropriate. Service industries deliver a service therefore the cost classification of direct and indirect is more appropriate. The cost composition in a service industry is different to that of manufacturing industries. The main reason for this difference, according to Glautier and Underdown (1997:415), being that in service industries labour comprises a greater portion of the cost.

A service is provided by a servicing organisation as their final product. Dyckman *et al.* (1994:366) maintain that when it comes to the analysis of costs in a service organisation, a distinction must first be drawn between the services offered. Service organisations seldom provide only a single service.

Dyckman et al. (1997:366) continue that whether these services are provided in a market context or offered by a not-for-profit organisation, issues relating to pricing, cost control, and performance evaluation are all fundamentally tied to cost measures.

Rayburn (1996:25) describes a service organisation as having little or no inventory, and that the input is often intangible, such as the health care services, and quite difficult to define. Service companies usually employ significant amounts of labour and can be for-profit or not-for-profit organisations.

Rayburn (1996:26) further states that service industries inventory accounts usually include a supply inventory for material used in the rendering of a service. These service organisations may have a Work in Process account, but usually do not have a Finished Goods account. Workers in these types of organisations convert their input, including their own efforts, into finished services. These inputs, thus, require costing.

In a service organisation, a 'Work in Process' inventory account may be maintained to show unexpired costs for projects not yet completed. Barfield *et al.* (1997:125) maintain that if necessary a service organisation may show a completed service account when projects are completed. The latter account is, however, not often shown because most service organisations perform services that are transferred to the

customer almost immediately when completed. The total cost of performing the service is sent to the income statement as an expired cost (cost of services rendered) at the time the service is transferred.

Horngren *et al.* (2000:36) support Rayburn, and Glautier and Underdown's, theories that service sector organisations have little to no inventory. These types of organisations do not have any inventory of tangible products at the end of a financial period. A service is provided in the form of intangible products – services to their customers. Labour costs are typically the most significant cost category. Labour costs can often account for as much as 70 – 80 percent of total costs.

The analysis of cost behaviour is important to all organisations, including not-for-profit organisations. Effective management of all service providers, including universities, hospitals, and not-for-profit organisations, must acquire a clear understanding of these costing concepts. Most organisations of this type have a unique cost mix. Fixed costs account for 60 to 80 percent of total hospital costs. These fixed costs usually comprise labour costs – which require cash outflow. This is a characteristic of a labour intensive organisation (Rayburn, 1996:59).

Moreover hospitals allocate 10 to 15 percent of their space for standby emergency events, giving them built-in idle capacity. This prevents hospitals from enjoying the advantages of higher profits that a capital-intensive organisation realises at higher volumes, beyond break-even volume. The cost structures of health care institutions present a challenge to the cost accountant, especially due to their labour-intensive and capital-intensive characteristics (Rayburn, 1996:60).

2.5.1. Job costing methods

The two major differences between job-costing for manufacturers and service organisations are: direct material are often insignificant for service organisations and may be easily included in overheads rather than accounted for separately and differently, and service labour and labour related costs are usually larger

than any other cost item. As a result, a service organisation overhead rate is more often based on labour costs. In some service organisations, labour is often the only directly traceable cost (Rayburn, 1996:175).

Horngren *et al.* (2000:97) describe job costing as a costing system whereby the cost of a product or service is obtained by assigning costs to a distinct, identifiable product or service. A job is a task for which resources are expended in bringing a distinct, identifiable product or service to the market. Frequently a job is custom made for a specific customer.

Horngren *et al.* (2000:98) sets out a six-step general job costing approach for the service sector (where no support department allocation is needed) when assigning costs to individual jobs:

- Step 1 - Identify the job that is the chosen cost object,
- Step 2 - Identify the direct costs for the job,
- Step 3 - Identify the indirect-cost pool associated with the job,
- Step 4 - Select the cost-allocation bases to use in allocating each indirect-cost pool to the job,
- Step 5 - Develop the rate per unit of the cost-allocation bases used to allocate indirect costs to the job,

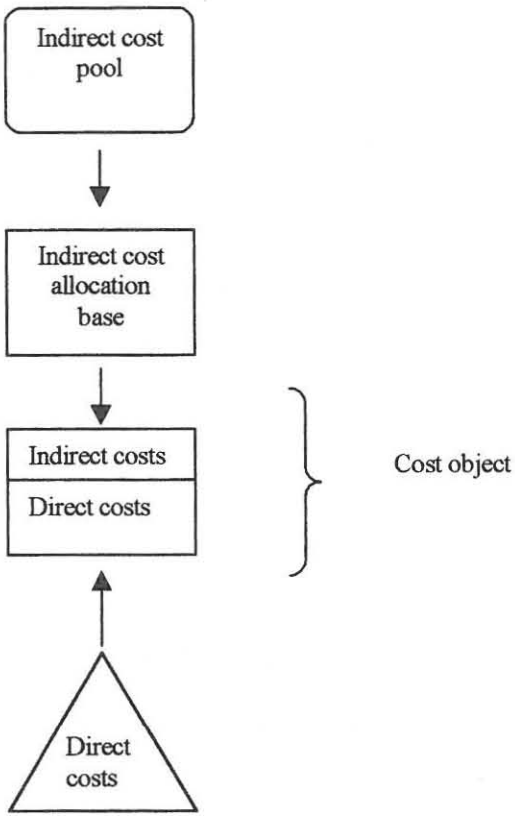
  Formula: Indirect cost rate = Total costs in indirect-cost pool / Total quantity of cost allocation bases

- Step 6 - Assign the costs to the cost object by adding all direct costs and indirect costs:

Direct job costs traced	R x
Indirect job costs allocated	R x
	R xx

A job costing overview in a service organisation

(Horngren *et al.*, 2000:100 Adapted)



2.5.1.1. Illustrative example – job costing in the service sector

From the above sketch and from the above explanation of overhead allocation as done in the service sector, an illustrative example may be formulated to support calculations made using traditional job costing in the service sector. The following figures from a service concern using multiple direct cost categories and multiple indirect cost pools are assumed:

Service provided include:

Professional partner labour – R 200.00 per partner hour, 160 hours = R 32 000.

Professional associate labour – R 80.00 per associate hour, 1 440 hours = R 115 200.

Information specialist – R 70.00 per specialist hour, 80 hours = R 5 600.

Phone / fax / copier – identified with every job, = R 1600.

Travel / accommodation – identified with every job, = R 2 200.

Audit support – R 50.00 per professional (partner & associate) labour hour = R 80 000.

Professional liability insurance – 15 % of professional labour compensation = R 22 080.

Secretarial support – R 36.00 per professional partner hour = R 5 760.

In order to calculate the cost of providing this service, the following:

Direct costs:

Professional partner labour	= R 32 000
Professional associate labour	= R 115 200
Information specialist	= R 5 600
Phone / fax / copier	= R 1 600
Travel / accommodation	= R 2 200
Total direct costs	**R 156 600**

Indirect costs:

Audit support	= R 80 000
Professional liability insurance	= R 22 080
Secretarial support	= R 5 760
Total indirect costs	**R107 840**

Total costs incurred to provide the service = R264 440

(Source: own research)

A more complete and applicable illustration of ABMA to hospitals can be found in paragraph 9.4. page 203.

2.5.2. Allocating secondary (support) costs

As mentioned in paragraph 2.5. page 35, service and manufacturing organisations may be divided into a production department and a service (ancillary) department that provides a support system to the production department. Often these 'support' costs must be apportioned to the production department.

Both Rayburn (1996:97) and Horngren *et al.* (2000:511) conclude that three methods exist which may be used to allocate support (ancillary) department costs to the main production costs.

These three methods of secondary allocation are set out as follows:

- Direct allocation method,
- Step (sequential or step-down) allocation method,
- Linear algebra (reciprocal) allocation method.

Direct allocation method

Horngren *et al.* (2000:511) maintains that this method is the most widely used method of allocating support department costs. This method, often called the direct method, allocates each support department's costs directly to the operating department.

The simplicity of this allocation method adds to its increasing popularity. There is no need, when using this method, to predict the usage of support department resources by other support departments.

Step (sequential or step-down) allocation method

Rayburn (1996:100) maintains that when using the step method of cost allocation, accountants follow a sequence when distributing the costs of all the support departments to other departments.

This method requires the support departments to be ranked (sequences) in the order that the step-down allocation is to proceed. The cost in the first ranked support departments are allocated to the other departments and to the operating departments. The cost in the second ranked departments are allocated to those support departments not yet allocated and to the operating department. This process is followed until

the cost in the last ranked support department have been allocated to the operating department (Horngren *et al.*, 2000:512).

Linear algebra (reciprocal) allocation method

This method according to Rayburn (1996:101) achieves greater exactness than the step method, because it realises reciprocity between support departments. This exactness is, however, only achieved if the estimated level of support that departments give to each other is valid. For complex decisions regarding pricing, making or buying of products – the linear method is used to obtain more precise and accurate allocation of costs.

This method allocates costs by explicitly including the mutual services provided amongst all the support departments. Horngren *et al.* (2000:512) maintain that theoretically, the direct and step method is less accurate when support departments provide services to one another reciprocally.

Overhead costs must be applied to the different services offered by the service organisation in order to adequately cost (price) the output offered by it. Dyckman *et al.* (1994:367) mention that applying overhead costs to different services, a meaningful relationship must exist and be estimated between each important activity performed by the organisation and the requirement of the final service provided.

Dyckman *et al.* (1994:367) continue that a cause-and-effect relationship between the cost item and the allocation basis must exist wherever possible. If no relationship can be identified, managers must resort to an arbitrary basis to allocate the costs of specific activities to the final service.

When calculating overhead application rates to be used by service industries, a distinction must be made between direct and indirect cost. This distinction is dependent on the attachability or traceability of the cost elements. Direct cost are not allocated to cost centres because they are clearly traced to this centre (cost object). Indirect cost cannot be traced to the cost centre. No allocations are necessary for direct cost, indirect cost, however require a basis for allocation (Rayburn, 1996:95).

The allocation bases for indirect cost must bear a relationship to the kind of service an organisation renders. Maher (1997:191) gives examples of allocation bases inter alia:

Common costs and typical allocation bases for material handling - quantity / value of material:

1. Laundry - weight of laundry processed,
2. Billing and accounting - number of documents,
3. Indirect material - value of material,
4. Dietary - number of meals,
5. Personnel department - number of employees / labour hours.

Accountants must often resort to an arbitrary basis when there is no clear cause and effect relationship between the cost and the cost object. Horngren *et al.* (2000:501) set out criteria that may be used by managers to guide them in their decisions relating to choosing the appropriate cost allocation basis.

Cause and effect

Using this criterion, managers identify the variable or variables that cause resources to be used. If there is a link between the cost and the cost object, then a cause-and-effect relationship exists between them.

Benefits received

In this criterion, managers identify the beneficiaries of the output of the cost object. The costs of the cost object are allocated among the beneficiaries in proportion to the benefits each receive.

Fairness and equity

This criterion is often cited in government contracting when cost allocation is a means for establishing a price, satisfactory to the government and its suppliers. The allocation here is viewed as a 'reasonable' or 'fair' means of establishing a selling price in the minds of the contracting parties. For most allocation decisions, fairness is an objective rather than an operational criterion.

Ability to bear

This criterion advocates allocating costs in proportion to the cost object's ability to bear them. An example is the allocation of corporate executive salaries on the basis of divisional operating income; the presumption is that the more profitable division has a greater ability to absorb corporate headquarters' costs.

2.6. Factory overhead cost allocation problems

In 1949, Goetz stated that, traditional costing data tended to be irrelevant and mischievous. He insisted that traditional systems be discontinued to save the clerical costs of operating them and that each overhead account should be homogeneous with respect to every significant dimension of managerial problems of planning and control (Malcom, 1991: 74).

He clarified the issue of dimensions by naming the following examples: number of units of output; number of orders; number of operations; plant capacity; number of catalogue items offered; and span of anticipation. These dimensions would later become known as cost drivers. This was not the first time that the concept of dimensions (cost drivers) was raised. In 1936, Dean conducted pioneering cost studies whereby he identified product variety as an important level that influences these costs (Malcom, 1991:75).

By the early 1980's organisations began to realise shortcomings in their cost accounting and management systems. Management realised that these systems were generating inaccurate costing information. They could no longer trust the information generated by these systems to effectively and efficiently carry out their functions of planning, control and decision-making.

More recently, Johnson and Kaplan (1987:2) maintained that management accounting information is produced too late, too aggregate and too distorted to be of any use to managers in their planning and control decisions. Management accounting systems focus too narrowly on inputs, such as direct labour hours, which according to Cokins (1998:5) are relatively insignificant in today's production environment, primarily due to increased complexity caused by:

a) Proliferation of products and service offerings,

b) More types of channels and customers, and

c) New and complex technologies

Pieper (1998:1) maintains that these traditional cost accounting systems that were designed to address issues of inventory valuation for external audiences have two deficiencies:

- Its inability to accurately determine actual total product or service costs,
- Its inability to provide useful information to management for purposes of planning, control and decision-making.

As a result managers selling multiple products and delivering multiple services make decisions relating to pricing, product mix and technology based on information obtained from traditional costing systems, which is inaccurate.

Glad and Becker (1994:8) have summarised the deficiencies and shortcomings associated with traditional accounting to include, among others, the following:

- Labour, when used as a basis for the allocation of overhead cost, is irrelevant as it is significantly less than overhead cost. Many overhead costs do not have any relationship to labour hours or labour costs. Using labour hours as allocation basis for overhead cost will severely distort product and service costs.

- Technological cost (improved complex production process, i.e. robotics, computer-aided designs, computer-aided manufacturing and flexible manufacturing systems) are treated as period cost and expensed using the straight-line basis. Direct cost (labour) is being replaced by indirect (machine) cost.

- Service-related cost has increased considerably in the last few decades. A greater awareness now exists amongst service providers to better cost their products and services to determine profitability.

- Customer-related cost (financing, discounting, distribution, selling and after-sales) is not related to the product cost object.

- Information technology and systems are to some extent, replacing direct labour. These costs are treated similarly to organisational overhead cost and not related to the product or other cost object (customers).

- Increased world wide competition, brought about by increased productivity, economies of scale, improved communication technologies, improved transportation and marketing skills, have led to substantially increased marketing cost.

- Greater variety, complexity and diversity of products and services are not taken into consideration in traditional costing systems.

Johnson and Kaplan (1987:125) support this undesirable state of affairs surrounding the aspects of traditional costing systems. This situation has been summarised into three basic points:

a) Accounting information supplied to manufacturers is produced too late, too distorted and too aggregate to be of any use to managers in their planning, control and decision-making functions.

b) Traditional costing systems do not provide details on process efficiencies. Traditional costing systems rely and focus too heavily on volume related cost drivers, i.e. direct labour hours, to allocate overhead costs to various cost objects (products or services).

c) Finally, most importantly, traditional costing systems do not produce accurate product or service cost.

2.7. Activity-based costing - a possible solution

In traditional cost accounting systems, direct costs such as costs of specific services (i.e. in the health care sector; use of operating rooms, diagnostic procedures, laboratory testing, pharmacy, and physical therapy) are billed to the patient directly. Indirect costs (overhead) however, for the whole hospital operation, including individual departments, are effectively accumulated, divided by the total number of patient days to determine the indirect cost rate per diem (Udpa, 1996:83).

Udpa (1996:84) concludes that using traditional costing systems in service organisations distorts costs. In hospitals, using cost per patient day is irrespective of patient type, level of care, procedure being performed, or length of stay. Not all indirect costs vary on a patient-day basis.

Chan (1993:71) explains that revenues or payments within the health care sector are fixed per discrete episode of care on the basis of diagnosis related groups, per diem. Health care administrators concentrate on managing the bottom-line of their organisations by placing special emphasis on cost control and management. Administrators turn to standard-full-costing, variance analysis, and bottom-line management as possible tools to assist them in their planning, decision-making and control functions.

Chan (1993:72) explains that health care administrators and managers turn to a three-stage allocation basis for determining standard-full-cost per service unit:

- Stage 1 – Allocation involves the tracing of direct costs to the cost object, which may include departments, divisions, territories, or products. (Cost object is any item for which a separate measurement of cost is desired, direct costs can be identified specifically with or traced to a given cost object in an economically feasible way).

- Stage 2 – This allocation stage involves allocating and reallocating costs from one cost object to another cost object (except in cases of a product cost object).

- Stage 3 – This final stage involves allocating indirect costs to a service or product. (Indirect costs are those costs that cannot be identified specifically with or traced to a service or product in an economically feasible way).

Unfortunately this system is not guaranteed to produce accurate and reliable service or product costs. The problem with this system arises in the selection of appropriate bases for the allocation of indirect costs to the cost object. Chan (1993:73) believes that the most important factor to consider when choosing appropriate allocation bases is that a cause-and-effect relationship must be present between the allocation bases used and cost to be allocated.

A practical solution to overcome these inadequacies in traditional costing systems was desperately needed. Kaplan, Cooper and Thomas presented a completely new concept in cost accounting, namely ABC (Mabberley, 1992:1). This new system would eventually illuminate the negative aspects associated with traditional cost accounting systems.

In addition to the distortion of true costs resulting from the use of traditional costing systems, the rise of ABC resulted from external pressures as well. Competition levels facing organisations has increased dramatically over the last few decades. Cokins (1998:6) believe that organisations were relatively profitable in the past. Inaccuracies and mistakes in their profitability calculations would be masked by their profitability. Even unprofitable products and customers could be carried because the more profitable products and customers would subsidise these losers. Misleading cost calculations and allocations would not have a negative impact on the organisation.

Pieper (1998:1) maintains that ABC was developed to serve as a practical solution to problems encountered with traditional costing systems. In the early 1980's, many companies who were using traditional costing

systems realised that the information gained from these systems were inaccurate and distorted. The resulting effect was management's inability to:

- Accurately determine actual total product or service costs and
- Provide useful and timeous information for the purpose of making operating decisions.

ABC began when manufacturers sought alternative approaches of applying overheads to production. According to Baker (1996:19) in the United States, the most commonly used basis for the allocation of overheads was either direct labour hours or direct labour costs. In an environment where overhead costs were increasing in all aspects of production and where labour costs were on the decrease, using labour hours or labour costs as allocation basis for overheads now became invalid and impractical. Unfortunately breaking away from tradition, especially when this tradition dates back to 1880, is a very difficult task.

Today this situation is dramatically different. Businesses cannot afford as many mistakes as they could in the past. Accurate cost information is critical to managers as unsuccessful products and customers must be illuminated from the system. Non-value adding activities must also be identified and replaced by value adding activities (Cokins, 1998:6).

ABC identifies activities that are responsible for costs. Activity cost is passed on to the product or service only if the product or services use the activity. ABC is a methodology that measures the cost and performance of these activities, resources and cost objects. Resources are assigned to activities, in turn the activities are assigned to cost objects based on their use. The causal relationship of cost drivers to activities is recognised in ABC (Pieper, 1998:1).

As the number of activities increase, an ABC system is better able to capture the underlying economies of the organisation's operations, and the reported activity or product or service cost comes to the fore. Additionally, ABC analyses all activities existing to support production and the delivery of goods and services (Pieper, 1998:1). ABC works on the following basis:

- Assigns cost to activities based on the consumption of resources,
- Assigns cost to different markets, distribution channels, and services,
- Overcomes distortions caused by high versus low volume product or services.

An alternative costing system is needed in the health care industry. Canby (1995:50) maintains that while traditional costing systems break cost into direct and indirect expenses, activity-based costing defines cost in terms of organisations' processes or activities and determines cost associated with these specific activities or events.

Canby (1995:50) further maintains that by using ABC in the health care sector, health care organisations are able to better understand the cost that are associated with patient assessment and the provision of diagnostic tests, as well as factors influencing the various levels of cost.

2.8. Summary

In this chapter a better understanding is obtained of the various terms frequently used in cost accounting. Cost accounting was defined as a comprehensive term that describes the techniques, systems, conventions and principles employed by organisations to plan and control the utilisation of its resources.

Financial accounting is largely concerned with the compilation of financial statements for external use, to be used by those who have an interest in the happenings of the organisation.

Finally management accounting focuses on the informational requirements of the organisation which will be used by managers to fulfil their planning, control and decision-making functions.

The evolution and development of cost accounting was highlighted by Luca Pacioli's publications in 1494 that contained ground-breaking developments for the double entry system used in accounting.

Traditional cost accounting in manufacturing and service organisations was described, while factory overhead cost and problems associated with overhead allocation bases, and alternative methods of overhead allocation were highlighted.

ABC, lastly, suggested as a possible alternative method of cost accounting, was suggested to replace traditional cost accounting.

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3. Activity-based costing

ABC as a continuously developing costing system is sketched. Relevant aspects critical to the successful implementation of ABC in an organisation will also be highlighted in this chapter. Special attention is drawn to the steps critical to the implementation of ABC.

3.1. Introduction

Accurate and relevant cost information is critical to any organisation that hopes to maintain, or improve its competitive position. For years organisations operated under the assumption that their cost information actually reflected the costs of their products and services when, in reality, it did nothing of the kind. While hiding their shortcomings behind a cloak of precision, over-generalised cost systems were actually misleading decision-makers, causing them to make decisions inconsistent with their organisations' needs and goals (Institute of Management Accountants, 1993:2).

Conventional wisdom being challenged, a new thought wave emerged: an organisation should understand its cost driver – and apply these drivers to the cost of products and services in proportion to the volume of activities that a product or service consumes. This powerful thought became popular as ABC (Glautier and Underdown, 1997:433).

ABC was first presented in a formal way by Professors Kaplan, Cooper, and Johnson in Harvard in 1987 (Mabberley, 1992:1). It has emerged through various revolutionary steps since the 1980's. Before the 1980's various academics wrote articles about the theoretical possibilities of ABC. In the early industrial age from 1890 to 1940, a few financial controllers who were heavily involved with their cost engineers actually performed rudimentary ABC analysis (Cokins, 1999b:1).

It was, however, not until the 1980's that a combination of personal computer-based horsepower and a more intense focus on overhead and indirect costs brought about a flurry of business articles and experimentations by companies, using this new system. The focus of ABC was initially for better and more accurate product and service costing (Cokins, 1999b:1).

As ABC moved into the early 1990's, some organisations began leveraging the activity cost data for more operational purposes. This would include to change and manage the same ABC calculated activity cost that

was accumulating into their product and service cost, particularly the activities contained in the unprofitable products and services (Cokins, 1999b:1).

3.2. Activity-based costing defined

Maher (1997:236) defines ABC as a costing method that assigns cost first to activities and then to the products or services use of the activity. It is based on the concept that products and services consume activities and these activities, in turn, consume resources.

Barfield *et al.* (1997:239) recognise that several levels of cost exist. By accumulating cost into related cost pools and using multiple cost drivers to assign cost to product and services, managers fulfil the fundamental components necessary for ABC. This method focuses on attaching cost to products and services based on the activities conducted to produce, perform, distribute, or support those products and services.

Flesher (1992a:36) defines ABC as a costing system that bases the overhead allocation basis on more than one activity. Historically direct labour was a large part of total production costs, while overheads represented a smaller component. In most cases direct labour was the action that drove (caused) overhead cost. Thus it was appropriate to use direct labour as the allocation basis. However, such is no longer the case, overhead cost makes up a large component of total production cost, while direct labour represents a smaller percentage of the total cost. ABC uses various activity pools to allocate overhead cost to the product or service.

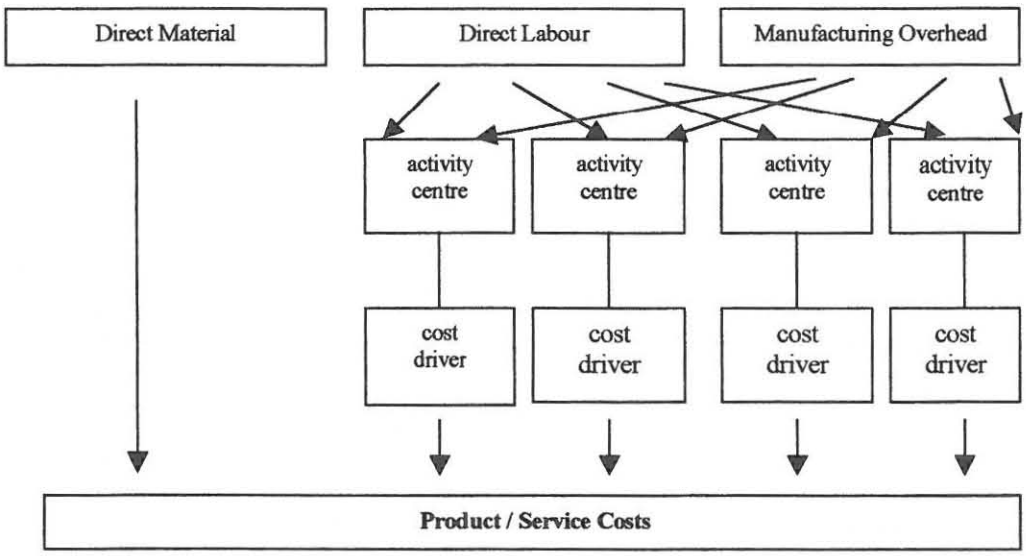
Mabberley (1992:8) maintains that ABC can be used for a variety of purposes. It can form the basis of an ongoing cost and performance management strategy, which may incorporate ABB and use activity analysis as a means of measuring and maintaining the cost, volume, value and quality of a business process. It does not control the business, but simply provides information that may influence the decision makers in the management process by providing indicators which help to demonstrate the cost utilisation within the organisation.

ABC is a cost tool that identifies the activities that are responsible for cost. Activity cost is passed on to products and services only if the product or service used the activity - (activities consume resources, and product and services consume activities). As the number of activities increase, ABC is better able to capture the underlying economics of an organisation's operations, and the reported activity or product or service cost comes to light. In addition, ABC analyses all activities that exist to support the production and delivery of goods and services (Pieper, 1998:1).

ABC can best be explained as a tool that traces the cost element to a cost pool (activity centres) and utilises a recovery basis (cost driver or output measure) to trace costs to a product or service (Glad and Dilton-Hill, 1992:148)

Activity-based costing approach

(Glad and Dilton-Hill, 1992:149 Adapted)



Cokins (1999a:3) describes ABC as an advanced cost re-assignment mechanism that resolves structural shortcomings in the general ledger. ABC flows cost with the understanding that events trigger work to happen. Consequently, cost, measures the events and effects the flow back towards the event. Most events, called activity drivers, start with customers who effectively place the demands on work that then shows up as costs.

The main emphasis in ABC lies on cause-and-effect relationships, where cost drivers are matched with cost activities (Baker, 1996:19). ABC focuses on activities as the fundamental cost object. It uses the cost of these activities as the basis for assigning cost to other cost objects such as products, services and customers (Cooper, 1991:355). Cost is therefore allocated on the basis of the utilisation of activities.

A cause-and-effect relationship must be present when choosing the appropriate basis for the allocation of overheads to production. There is no cause-and-effect relationship between direct labour and manufacturing overheads. The business environment today is very different from that which existed 100 years ago. During the American Industrialisation, direct labour constituted a large percentage of the resource inputs for manufacturers, thus exercising a largely proportional influence on the consumption of overheads. In addition, sophisticated product costing was also difficult because of the limits of manual computation. Therefore, dividing overheads by direct labour worked excellently for high-volume, low diversity mass production but very deceptive results were obtained in a service intensive market (Boltin, 1995:1).

Work consumed by other work that is too far removed to recognise the diversity of the final cost receiver, poses no problem for ABC. By default, that work activity can be directly traced to other work that does not drive it and which is intermediate to the final product or service (Cokins, 1999a:4). The power of ABC to re-assign cost along an arterial flow network without regard for levels or steps, and at the element of work, not a department – gives ABC great accuracy.

Brimson (1991:21) concludes that ABC is normally used to support several types of decisions. These include the following:

Product and service costing

Managers use product and service costing to make pricing, estimating, make/buy, and design-to-cost decisions. A product and service cost is considered accurate when it mirrors the manufacturing process or

the total cost of delivering a service. An inaccurate product or service cost increases the chances of incorrect decisions, based on these costs.

Managing cash and liquidity

Cash and liquidity are as essential as reported profits. Cash leads to liquidity, and liquidity is critical in a business environment of high risk and greater uncertainty. Cash and liquidity help withstand surprises, facilitate adaptations to sudden changes, and enables an organisation to capitalise on the narrow windows of opportunity that are common in a turbulent environment. A business can go bankrupt while reporting profits, but it will never go down as long as its cash and liquidity positions are strong.

Cost control

Cost information should encourage enterprise excellence. Waste cannot be tolerated. Products and services should be designed and managed to optimise performance. Activities should support corporate objectives.

Decision support

Cost information is used to facilitate make/buy, pricing, and design-to-cost decisions. Too often managers responsible for these decisions use cost information from outside the cost management system.

Cost information provided by the traditional cost accounting system is not timely and is often inappropriate for decision-making. It is inappropriate because it is compiled on the assumption that all support activities are related to production volume, and it aggregates organisational units into common cost categories. Cost data should be updated to correspond to the timing of the decision – not to accounting conventions.

Cokins (1999b:5) maintains that organisations find that ABC data has three main uses:

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Visibility

By simply seeing the activity costs worded in ABC 'action verb-adjective-noun' grammar, people relate to what work is being done. In addition, a better understanding is obtained of what causes their work to fluctuate, and what are relevant cost drivers.

Decision support

ABC data is structured to segment the diversity of consumption by the products, customer services, and all the intermediate outputs that build up to them. Combined with the price charged and revenues, managers can better rationalise their products, services, channels, and customers based on their profitability.

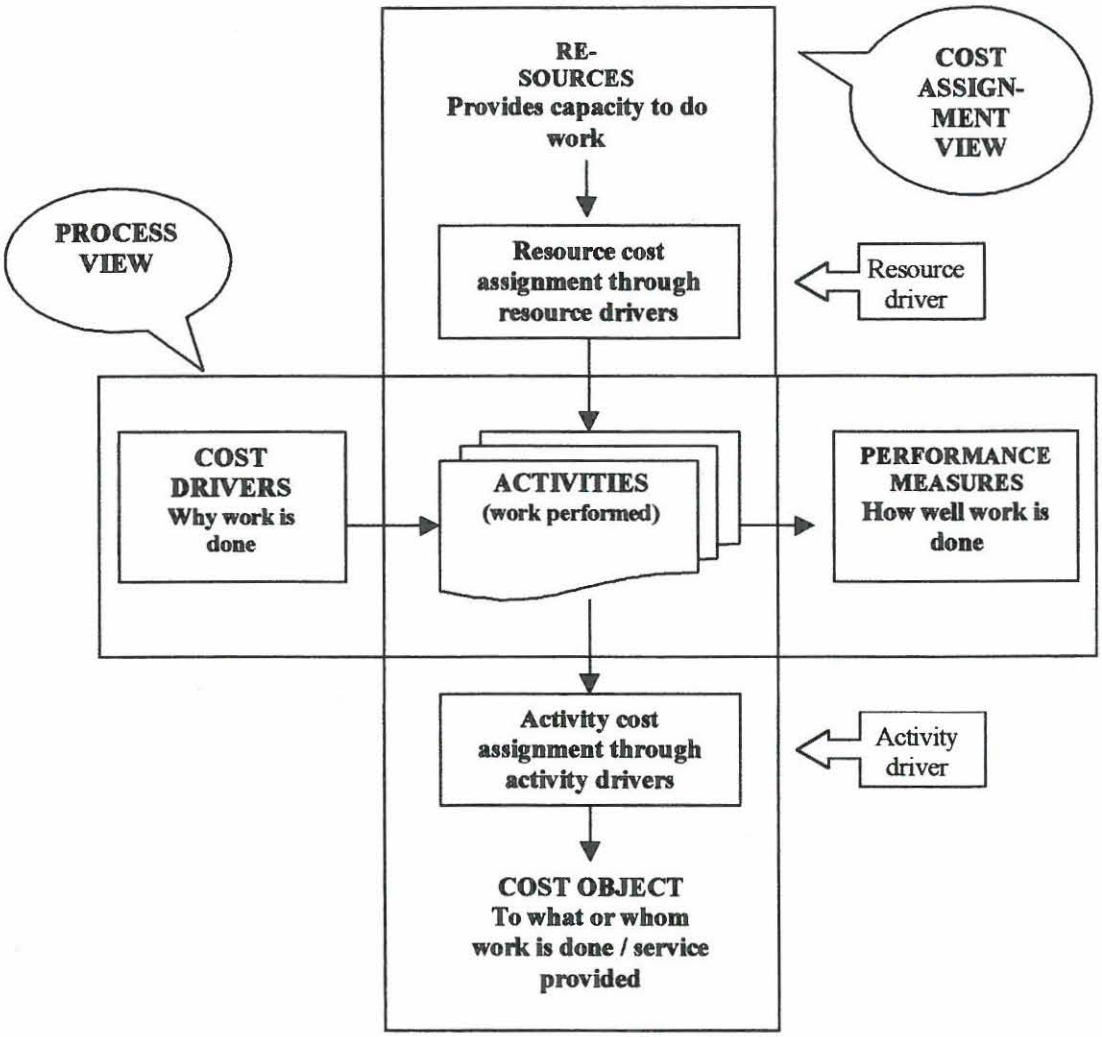
Predictive planning

Managers are constantly faced with trade-off decisions. Traditional costing makes it difficult to understand what varies with what change because department level costs and their lump-sum reported wages and fringe benefits are too aggregate to use for variable analysis. Costs vary at the level of work activities, not as a department.

ABC comprises several building blocks. The building blocks in the vertical dimension work together to assign cost from resources to activities and from resources to the cost object. The building blocks in the horizontal dimension supply information about the performance of activities (Turney, 1996:96).

Activity-based costing building blocks

(Turney, 1996:96 Adapted)



Horngren *et al.* (2000:140) describe ABC as focusing on activities as the fundamental cost object. Activities are events, tasks or units of work with a specific purpose. ABC uses the cost of these activities as a basis for assigning costs to other cost objects such as products, services, or customers.

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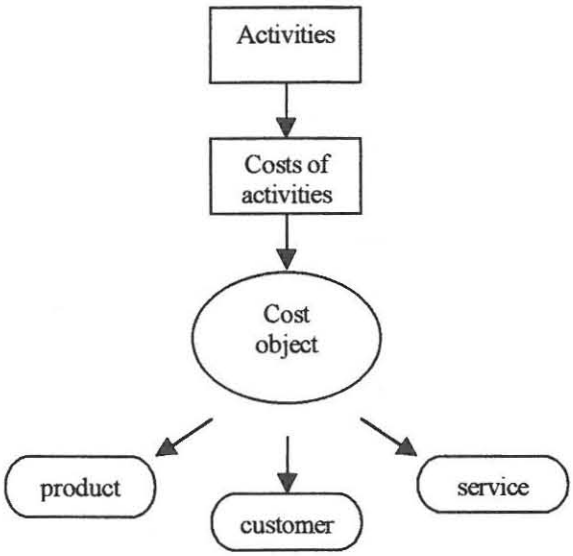
Activity-based costing – simplified

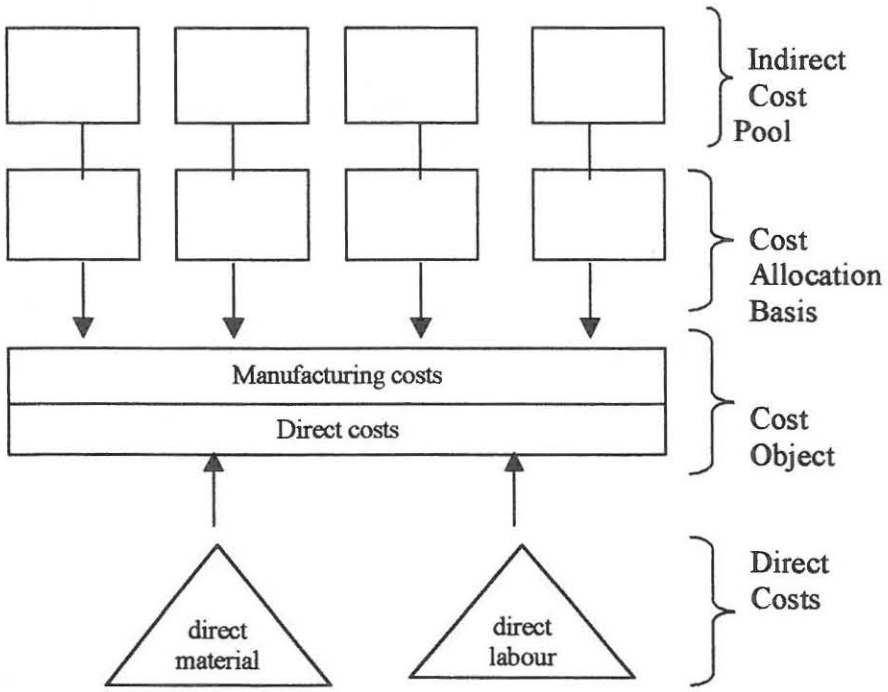
(Horngren *et al.*, 2000:140 Adapted)



Horngren *et al.* (2000:146) describe job costing using ABC by illustrating it as follows:

Activity-based costing – job costing

(Horngren *et al.*, 2000:147Adapted)



3.3. Activity-based costing in action

The basic distinction between traditional cost accounting and ABC, can be summarised as follows: Traditional cost accounting techniques allocate overhead cost to a product or service based on attributes of a single unit. Typical attributes include the number of direct labour hours required to manufacture a unit, purchase cost of merchandise resold, or the number of days occupied. Allocations, therefore, vary directly with volume of units produced, costs of merchandise sold, or days occupied by the customer. ABC systems, in contrast, focus on activities required to produce each product or provide each service, based on each product or service's consumption of these activities.

Using ABC, overhead cost is traced to products and services by identifying the resources, activities and their cost and quantities to produce output. A unit of output (a driver) is used to calculate the cost of each activity. Cost is traced to the product or service by determining how many units of output each activity consumes during a given period of time (Institute of Management Accountants, 1993:3).

3.3.1. Review and confirm requirements

Before starting with an ABC system, an organisation must consider that the efforts involved in gathering, analysing, and recording information on activities, demand time, money, and manpower. Brimson (1991:24) emphasises that ABC is not an effort that should be undertaken lightly or without considerable forethought.

Fienberg (1999:1) suggests that an organisation that is considering an ABC system should find out whether ABC has been implemented in the industry. Do the organisation's competitors subscribe to an ABC system? This question will answer any uncertainty an organisation has about implementation or not. If competitors are not on an ABC system, chances are that their product and service costs are also distorted and inaccurate. A competitive edge could be gained in such instances.

Baker (1996:19) strongly suggests that all levels of management become involved in, and dedicated to, the implementation of any ABC system. Management must decide where to start, which departments or sites will adopt this new system first, how implementation will take place, and who will design and implement the system. Design and implementation should be planned and overseen by a steering committee composed of 'in-the-know' employees throughout the organisation.

In turn, ABC systems cannot be successfully implemented without the wholehearted support of management accountants. Since traditional cost accounting systems are the responsibility of management accountants, it is often difficult for them to accept that these traditional systems may be inadequate, inaccurate, or misleading. Unless these key individuals are convinced that traditional methods no longer work, and that ABC is the alternative, the ABC system is doomed for failure (Institute of Management Accountants, 1993:3).

Management accountants have the appropriate background to help properly focus the ABC from the start. Their insight can contribute to the identification of the appropriate unit of analyses (product, service and process), and probable causes of the current cost system's failure (Institute of Management Accountants, 1993:3).

Implementation of an effective ABC will never occur unless it is supported at all levels within the organisation. The Institute of Management Accountants (1993:4) emphasises that management must first be shown that existing cost accounting practices do not meet all of its cost information requirements. Managers can then be shown how ABC may be used to effectively fulfil those unmet requirements.

The Institute of Management Accountants (1993:4) also mentions that organisation-wide education is an important element in convincing management to change, as well as in effecting the change. In order to accomplish this, organisations' managers should be shown:

- How dysfunctional portions of their organisations' cost system work, or how they do not address important management informational needs.

- How these conditions could lead to inaccurate, and misleading information.
- How that information can lead them to make decisions at variance with both the organisation's goals and their individual goals.

Turney (1996:213) maintains that a key decision-maker's negative comments can be a major barrier to ABC. Myths, beliefs about the cost and value of ABC systems, while they contain grains of truth are not generally truths. Unless addressed, myths can become major stumbling blocks to the successful introduction of ABC. These myths must be aired out and any uncertainty surrounding any aspect of ABC must be pinned down and clarified. Demolition of these myths increases the chances of a successful ABC system.

Turney (1996:218) suggests that while generating interest in ABC is an important step, actual commitment to a new project requires evidence that it will yield substantial benefits for the organisation.
Canby (1995:55) agrees that commitment is very important when considering a new costing system. The decision to adopt ABC is a leadership decision that should not be seen or perceived as another flirtation with radical management theory. It is a time-consuming, labour-intensive process, and its success depends on total participation of the organisation. An organisation that capriciously enters the ABC process may experience disastrous results.

Finally, Turney (1996:219) believes that commitment will be forthcoming if two aspects can be demonstrated:

1) Firstly, that the organisation is the type that can benefit from ABC. Organisations with a lot of complexity and diversity are prime candidates for ABC. The more complexity, the more overhead there is, and the greater the potential for inaccurate costs. Diversity in products or volumes also increases the value of ABC.

2) Secondly, that there is evidence that the organisation's existing cost system is not doing the job. There are numerous symptoms of a 'broken' costing system. These include:

- Management believes that the cost information is distorted.
- Marketing and sales are unwilling to use cost information for product or service pricing, market entry, and product or service portfolio decisions.
- Sales go up, yet profits go down
- There is a 'bootleg' cost system within the organisation. (a bootleg system is an unofficial cost system{not blessed by accounting}).
- An improvement project fails to yield expected cost reductions.
- Customers 'cherry pick' products in an organisation. Customers love low-volume speciality products, but buy their high-volume products elsewhere, this is a sure sign of improper pricing.

3.3.2. Game plan

Before embarking on any project, it is important to know what the project is expected to accomplish. A project to implement activity-based costing is no exception. Without a fairly precise definition of its purpose, the project will result in an ABC system designed to solve the general problems of some hypothetical organisation, not the specific problems of a real organisation (Institute of Management Accountants, 1993:4).

Turney (1996:225) advocates the seven P's. These are: Proper, Prior, Planning, Positively, Prevents, Poor, and Performance. Some ABC system failures are directly attributable to poor planning. ABC is not overly difficult – neither is it a trivial task. It takes time and effort. Approaching ABC in an organised manner – the seven P's – ensure that the aspects of time and effort are well directed.

The Institute of Management Accountants (1993:5) believes that if the objective of the ABC system is to simply provide improved information for evaluating pricing opportunities, a different solution would be required, than if one of its objectives were to devise and track new methods of performance measurement on a day to day basis. Similarly, if the objective is to develop the system either in stages or through a pilot project rather than an organisation-wide basis, a different approach might be in order.

Baker (1996:19) suggests that management should not implement Activity-based costing simply because the system is popular. Managers should implement a new – perhaps ABC – system when the existing system has problems. Management must first identify the problems associated with the old system, these are commonly: either cost are too high, or profit margins seem inappropriate. After the problems have been identified, managers must decide what the objective of the new system will be. These new-system objectives usually address the problems that exist in the old system.

The conclusion can be reached that because factors differ from one organisation to the next, game plan specifics differ from one organisation to the next. Turney (1996:226), however, suggests that the steps in formulating a game plan remain the same, regardless of differing factors. These steps can be summarised as follows:

Formulating the objective

Define what ABC is to accomplish. ABC can be used for several purposes. It is important to select the specific purpose(s), and then design a model that serves specific purposes or objectives.

Describe the deliverables

Describe the improved information that will satisfy each of the objectives. After determining ABC objectives, a statement of deliverables should be prepared. This contains the purpose of the system and the improved information that will support each purpose.

Set the scope

Determine how extensive a project will be pursued. There are several choices regarding the scope that affects the time and effort required completing an ABC project. Some choices relate to the degree of management commitment to the project. Others affect the project purpose.

Describe the organisation structure

Determine how the project will be organised. Structuring the project's organisation is more than just identifying responsibilities and reporting relationships. It is also an opportunity to enhance commitment to ABC.

Identify team membership

Selecting individuals and functions that will comprise the design team is important for the success of ABC. Designing team size and composition depends on the project's purpose, size, and the urgency of completion. Designing team members also depends on the availability of staff.

Determine the training requirements

The type and scope of the training must be determined. Training is crucial to proper implementation, execution, use and acceptance of a new system. There are different types of training required, depending on the audience.

Complete a project schedule

Determine what tasks need to be accomplished and how long the project will take. The tasks that need to be accomplished to complete the project must be summarised, this includes an estimated time schedule for each task, and the overall time required completing the project.

Budget the cost of the project

An estimation of the resources required to complete the project must be set up. Achieving ABC benefits requires incurring cost. Internal and external costs should be budgeted up-front. This will allow careful comparison of the costs and deliverables.

The Institute of Management Accountants (1993:5) suggests that, in addition to Turney's steps, several questions should be answered before the project moves forward. These questions include:

- Who will own the new ABC system? Ownership of a new system should be consistent with its primary objective. In many situations it is desirable for someone outside finance to take ownership.

- How complex and detailed should the system be? To be effective, the system must make appropriate trade-offs between accuracy, flexibility and costs. Here, too, the system's primary objective must be

maintained. Too simple a system may not be accurate enough, while a system that is too complex may end up costing more than it is worth.

- What degree of accuracy is required and what precision levels will it produce? Once again the system's objectives are the key to making the precision versus accuracy determinations. If the new system is to be used to support strategic decisions, a lower level of precision can be acceptable than if the system is to be used to support tactical other day-to-day decisions.

- Will the system be integrated into a day-to-day financial accounting system, or will it be a stand-alone system maintained off-line? In many organisations, a well-designed, periodically updated model of their operations is sufficient for their ABC needs. An off-line implementation enables them to improve their cost information substantially without disrupting their day-to-day system activities. Each organisation, depending on its system's objectives, will decide on this issue.

- What approach to the cost assignment view should be adopted? The approach to the cost assignment view falls into two general categories. These include the following:

  - A two-stage approach. In the two-stage approach, sub-accounts of the general ledger are distributed to the various activities in the appropriate proportions using 'first-stage' cost drivers,
  - The multiple-stage approach. The multiple-stage approach attempts to mirror more closely the actual flow of cost through an organisation. Instead of trying to move cost from incidents to cost objects in just two stages, this approach emphasises the relationship between activities, and other activities, as well as between activities and cost objects. Following this approach,

costs move from incidents to cost objects in a series of steps, all based on cause/effect relationships.

Either a two-stage or a multiple-stage approach to ABC can be used to develop information about an organisation's resources, activities and cost objects. Either one can also provide the data to support the process view of ABC.

Once all these questions asked by Turney and the Institute of Management Accountants have been answered, planning for an ABC system can move forward. Following Turney's eight-step game plan, an organisation will get off to the right start.

3.3.3. Gathering the information

Mabberley (1992:84) suggests that the key requirement for all data (information) in ABC, is that it must be available at the lowest level at which reporting is to occur. Whether ABC is being used for strategic cost management, product or customer costs, and profitability analysis, or operational cost management, the cost control and usage data must either be originally captured or be allocated to the lowest level of analyses required, that is, activity.

Turney (1996:241) mentions that information required by an ABC system may be defined by a conceptual model; information about resources, activities and cost objects. The three primary sources for ABC information are described by Turney (1996:241) as follows:

- The accounting department has information about the cost of resources. This information is in the general ledger account balances.

- Information about activities comes from the people who do the work or are knowledgeable about the work. What are the activities? How do they consume resources? What are the cost drivers and performance measures?

- Information about the cost object, activity driver, and some performance measures is also found in the organisation's information system.

Baker (1996:20) emphasises that care should be taken to ensure that the data gathering processes result in data that is consistent, reliable, and relevant. Once data is gathered, care should once again be taken to ensure that reports and other systems outputs pertain directly to the objectives of the system. The steering committee must list the required outputs for the system. Both the objective and the scope of the new system will affect these outputs.

Schuneman (1997:4) maintains that costing data is only a valuable tool to management, if the data that is collected is analysed and used. The primary use of this data could include negotiations, strategic planning, and quality improvements.

Turney (1996:243) continues that there are five major sources where this required information could be obtained. He names them as follows:

- Observation
- Time-keeping systems
- Questionnaires
- Storyboards
- Interviews

3.3.4. Designing the activity-based costing model

Turney (1996:262) maintains that designing an ABC model is the most critical stage in the whole implementation process. The structure of the system is created and the intelligence is added. The designer's job is to meet the system objectives at the minimum cost and complexity. At the same time, the system should provide the right kind of information at the right level of detail. It is essential for the ABC system's success to support strategic and process improvement decisions.

The model should be as complex as necessary – *but no more complex*. If it is too complex, it will be too costly to design, implement, and maintain. It will also burden users with unnecessary detail and possibly reduce understanding ability. The model should be as simple as possible – *but no simpler*. If the system is too simple, it will report inaccurate costs, causing the model's activity information to be insufficient to support improvement processes (Turney, 1996:261).

Cooper (1990:78) agrees that the objective designers set should be to provide the most benefit possible at the lowest level of overall costs. Cooper (1990:78) sets out a five-step design plan for an ABC system. These steps are as follows:

- Aggregate actions into activities
- Report on the costs of activities
- Identify activity centres
- Select first-stage cost drivers
- Select second-stage cost drivers

Cooper (1990:78) continues that the complexity of the new system design appears to depend on many factors. These factors include management's objectives for the cost system and the diversity of the organisation's product mix. If a single management objective dominates, only a few cost drivers may be needed to achieve that objective. However, as design objectives become more complex, multiple drivers may be required.

Glautier and Underdown (1997:433) describe a four-step development process for an ABC model. These steps are as follows:

- Analyse and define activities,
- Determine the cost drivers for each activity,
- Identify activity centres, and
- Assign cost to products and services.

Brimson (1991:47) suggests that activities form the foundation in any cost management system. An activity describes the way an enterprise employs its time and resources to achieve corporate objectives. Activities are processes that consume substantial resources to produce an output. The principle function of an activity is to convert resources (material, labour and technology) into outputs (products and services).

Turney (1996:261) describes 'tried and tested' rules for success, and how they can be applied in following the major steps in the design of the ABC system. These steps are summarised as follows:

Step 1 – Identifying activities

The task of identifying activities is governed by the chosen purpose(s) of the ABC. Turney (1996:262) maintains that either way, activities must be identified. This is done with a process known as 'functional decomposition'. To identify activities using functional decomposition, an organisational chart is needed.

A drawback of grouping actions into activities is that the more actions grouped together into activities, the less likely the cost driver is to accurately trace the resources consumed by the product. Careful planning and consideration is needed before grouping actions into activities (Cooper, 1990:78).

Step 2 – Reconstructing the general ledger

Turney (1996:267) suggests that once activities have been identified, the next step is establishing activity cost. In the general ledger all the financial information concerning the organisations resources are found. It provides ABC designers with useful data, all in one place, and ready to use.

Unfortunately, the basic problem surrounding the ledger is that the ledgers are not designed around activities rather they are well designed for one specific purpose – preparing financial statements. To be useful, the ledger must be reconstructed along three lines. These include; combining related accounts, decomposition of accounts to department levels, and adjusting uneconomical items (Turney, 1996:269).

Step 3 – Creating activity centres

Cooper (1990:78) describes an activity centre as a segment of the production process for which management wants to report the cost of the activity performed separately. The ability to report costs by activity centres gives managers the ability to control activities more efficiently and effectively.

The Institute of Management Accountants (1993:16) defines activity cost centres as groups of activities that make up a business process. Activity centres are particularly useful when functional areas have been decomposed into larger numbers of activities and the major objective of the system is to understand the cost of business processes.

Step 4 – Defining resource drivers

Turney (1996:272) describes defining resource drivers as the fourth step in the ABC model design. Resource drivers, in turn, define the consumption of resources by activities. Attaching costs to activities often requires multiple steps, with a resource driver for each step. The process of cost assignment starts in the accounts of the general ledger. Cost is then moved progressively downwards or sideways, until it reaches the activities.

Step 5 – Determining attributes

Determining attributes is the fifth step in Turney's (1996:279) description in designing an ABC model. Attributes are labels that enhance the meaning of the information in the Activity-based cost model. Attribute 'customer' could be attached to an activity to signify that the activity supports customers and not products.

Step 6 – Selecting activity drivers

The Institute of Management Accountants (1993:17) suggests that drivers can also be selected to trace costs accumulated in the various customer, market, product, service or product / service line activities to those sub-sets of the organisation's products and services that make them necessary. In cases where there are multiple drivers for a single activity, a decision must be made as to whether the most representative driver will be used to trace the entire cost of the activity, or whether the single activity should be broken down further to accommodate the needs for the various drivers.

Turney (1996:281) believes that activity drivers capture demands placed on activities by cost objects. It is important to pick activity drivers carefully, so that product, customer, and other cost objects are costed accurately.

Cooper (1990:78) comments that as more and more actions are aggregated into an activity, the ability of a cost driver / activity driver to accurately trace the resources consumed by a product or service is significantly reduced.

3.3.5. Ensuring success

Unfortunately, once the ABC model design has been completed, only the first stage in ABC is achieved. Immediate re-commitment to the project should be the next reaction. Unfortunately, the best-designed models will be useless and will crumble if no one understands how to use their information.

As important as it is to design the system and implement a theoretically sound and properly kept system, the Institute of Management Accountants (1993:17) believes that it is just as important to make sure that management have been trained in the use of ABC. Management receives reports that are not only useful, but also understandable, thus it becomes vital for managers to understand the ABC model. It is also essential that the system information be kept up-to-date.

Quite frequently, ABC concepts will contradict fundamental principles that many managers thought were indisputable. For others, ABC might generate information that looks a great deal like the old information, but has a totally different meaning. Hopefully, these managers 'signed no' to the ABC project at the beginning after being convinced that the old methodology was incorrect. After the new system has been developed, these individuals need to be shown how this new system overcomes the old system's problems and how it will provide information that will enable each manager to make better decisions (The Institute of Management Accountants, 1993:17).

A key to ABC success is not to prepare reports that look like computer print outs, not to prepare reports that can only be understood and digested by the system's designers, and to avoid technical terms wherever possible by preparing reports with usual terminology (Turney, 1996:288).

A well-designed ABC system can be used as an effective budgeting and planning tool. The improved understanding of costs, activities, and their drivers make the ABC model a flexible tool for use in those and a wide variety of other managerial tasks (The Institute of Management Accountants, 1993:18).

As a final step, Turney (1996:299) concludes his report on ABC models by setting forth a plan for managing the process of change. This includes the following five listed actions:

- Action 1 - Brief Management.
- Action 2 - Identify improved goals.
- Action 3 - Assign responsibility for change.
- Action 4 - Provide user support.
- Action 5 – Feedback.

3.4. Advantages and disadvantages of activity-based costing

3.4.1. Advantages of Activity-based costing

ABC's cost management capabilities are considered to be superior to that of traditional cost accounting systems. Below are some of the advantages ABC holds for any organisation:

(i) Because of ABC's multidimensional focus on costs, the visibility of especially overheads is more apparent. Most ABC systems provide a very comprehensive reporting of cost structures, which are not typically found in traditional costing systems.

(ii) More accurate product cost information – ABC uses more data than traditional costing systems and provides more informed estimates of product and service costs. Better product cost information helps managers make decisions about pricing and whether to keep or drop products or services. If a product or service's profit margins are too low, or if money is lost, managers will probably decide to stop selling a product or stop delivering a service. Such a drastic decision must be based on the best possible information available.

- ABC enables management to establish the total costs of a product or service by allocating all the costs associated to the specific cost object in an equitable manner.

- ABC is valuable for planning - the establishment of an ABC system requires the careful and thorough study of the total manufacturing or service process of an organisation.

- ABC also assists marketers of products and services by providing more accurate cost numbers for decisions regarding pricing and which products and services to discontinue.

- The 'total cost' focus of ABC leaves much less cost to be covered from the margin, helping eliminate loss-making products. Cross subsidisation between products can easily be identified.

- ABC can be used to determine the costs and profits of other cost objects – which include customers, market segments, sales representatives, and distribution channels.

(iii) Highlights value added and non-value added activities. ABC allows management to focus on value added and non-value added activities, so that non-value added activities could be reduced or eliminated. ABC provides feedback information related to production design and potential areas for improvement or waste elimination. This system allows and encourages the use of non-financial measures of activity and performance.

- ABC highlights the causes of cost. An analysis of these causes can identify activities that do not add value to the value of the cost object. These activities could include moving materials and accounting for transactions. Although non-value activities can often not be completely eliminated, steps can be taken to reduce them.

(iv) Better information about costs of activities and processes. By identifying the costs of the various activities, managers gain useful information that the accounting system previously buried. Managers often find a variety of interesting and helpful information about the cost of activities. Managers also often realise how expensive one of its activities is, and subsequently take steps to reduce its costs.

(v) The most important advantage of ABC systems is probably its common sense appeal. Cost information developed for an organisation reflects its own peculiarities and uniqueness and reflect the logic of the business process. Many ABC systems are not developed by accountants, but rather by engineers, marketers, inventory managers, and the like.

(vi) Where small and big volume products (so called bulk and speciality products), are manufactured in the same factory. ABC makes a significant difference on the cost of the different product lines. Cross subsidisation typically occurs where traditional accounting methodologies are applied in these circumstances.

3.4.2. Disadvantages of Activity-based costing

Listed below are some of the disadvantages ABC holds for any organisation:

(i) ABC is significantly more complex than traditional systems. In order to provide the more detailed analysis of cost structures, much more analytical work needs to be performed. Greater sophistication in the cost management process will not come without increased inputs. Careful planning, however, can eliminate such unnecessary work. One of the great problems experienced here is where data that needs to be analysed are not electronically accessible.

(ii) ABC requires significant amounts of time and thus the costs to implement this system could also be high. If implementation is to be successful, substantial support is needed throughout the firm. An environment for change within the firm must be created in order to overcome a variety of individual organisational and environmental barriers.

- Individual barriers relate to; fear of the unknown or a shift in the status quo, potential loss of status, or a necessity to learn new skills. Organisational barriers often relate to 'territorial', hierarchical, or corporate culture issues. Lastly, employee groups (including unions) often build environmental barriers, regulatory agencies and stakeholder interests.

(iii) ABC does not conform specifically to GAAP. ABC would suggest that some non-product costs (such as costs in research and development) be allocated to products, whereas certain other traditionally designated product costs (such as depreciation of factory buildings) not be allocated to products.

- Consequently many organisations use ABC for internal reporting, while continuing to maintain their general ledger and subsidiary ledger accounts, and prepare their external financial statements based on more traditional systems. This requires two product or service costing systems and cause even more costs to be incurred.

- As ABC systems become more acceptable, organisations may choose to refine how ABC and GAAP determine product cost, to make those definitions more compatible and, therefore eliminate the need for two separate costing systems.

(iv) ABC is based on historical cost. For planning decisions (such as budgeting), future cost is generally the relevant cost.

(v) Where more complex accounting structures are to be developed and where the organisation does not have the necessary manpower or expertise to manage a more complex structure, the system may easily be discredited because of unreliable information produced.

(vi) ABC is only as accurate as the quality of the cost drivers. This distribution and application of cost become an arbitrary allocation process when the cost drivers are not associated with the factors that are causing the cost. The selection of cost drivers and allocation basis becomes very difficult.

(vii) The major disadvantage of ABC systems is that accurate and additional record keeping is essential to the success of this system. This often results in additional cost to be incurred to maintain accurate costing figures.

(viii) Companies can go overboard with their requirements for an ABC system that may render a wieldy and unmanageable system, especially if traditional general ledger systems are used. New methodologies for handling are being developed which will facilitate manipulation of vast quantities of data that will typically be handled in an ABC system. The ABC methodology is far from fully developed and some exciting new developments will take place in ABC, especially as experiences increase.

3.5. Summary

The degree to which an organisation can adapt to an environment of international competitiveness and world class manufacturing and service providing, is making the difference between winning and losing. The stakes are very high. The way that organisations traditionally measured production performance has been largely determined by the needs of the cost accounting system. These methods have been challenged over the last few years and have been shown to be misleading, confusing and irrelevant.

Most traditional costing systems utilise a single basis, (often labour) to distribute manufacturing cost to their products and services. This method of allocating overhead cost to a product or service commonly results in erroneous cost data. Often, products that have high volume (as a result, high labour) cost are overcosted. Likewise the cost of lower volume products is often understated, and many of the manufacturing costs of these products are overlooked.

ABC is a technique that was originally developed to improve understanding of the cost of the products and services. It provides an improved understanding of the cost of the products and services, by tracing resources to the activities performed within the organisation. These activities are traced to the product, service, or customer for whom the activity is performed.

ABC is meant to address internal operating concerns and is an augmentation to the traditional general ledger based cost management systems. It is not a replacement for traditional accounting, but makes use of the source documents provided from standard job costing systems. Instead of being heavily labour based, ABC looks at a business unit's events as cost drivers and ascribes all company resources and accumulates cost against those events in a time-phased fashion.

ABC is being professed by the accounting industry as the wave of the future, and is gaining broad acceptance through smaller, medium and larger organisations. This system is intended to serve performing entities and management alike. The key ingredient is integration - true integration of scheduling and cost management systems.

4. Activity-based management

The distinction between ABC and ABM is drawn in this chapter. ABM in action, including activity analysis and value chain analysis are highlighted. The implementation of ABM, and overcoming the obstacles encountered in implementation are also detailed.

4.1. Introduction

Krausert (1999:1) explains that ABM has evolved from an improved product and service costing methodology in the late 1980's (through ABC) to a management style that focuses on waste and non-value added time reduction in an organisation.

According to Anderson (1995:26) ABM can be categorised into three primary components. These can be summarised as follows:

- Action component – consists of ongoing analysis, opportunity identification, performance improvement and performance measurements;

- Information / cost component – a detailed and holistic understanding of business processes, activity costs and other information; and

- Evolution component – information is refined and enhanced in an ongoing, systematic and efficient manner.

Understanding the activities that management pay people to do and what management get in return for the resource commitment is what makes ABM a useful tool. No longer does management need to manage a business through oblique terms such as salaries, wages, overtime, depreciation, etc. Managers can look at the business in a horizontal, or process mode that yields information that is actionable. Management can see the activities that they are paying people to complete, not just cost categories made up in the accounting department. This is what information management truly needs (Krausert, 19991:1).

4.2. Activity-based management defined

ABM is a proactive approach whereby management is encouraged to pay more attention to managing activities and processes, rather than just managing the costs involved. Managing activities and processes are most important because it is these activities themselves that consume resources and cause costs (Carolfi, 1996:12).

This 'process' view of ABC, as mentioned in paragraph 3.2. page 58, allows management to focus on value added and non-value added activities in order to reduce or eliminate those activities that are not adding value, but cause cost to be incurred. This whole system, Glautier and Underdown (1997:439) describe as ABM.

Maher (1997:268) describes ABM as a system that does not focus on detailed calculations of product and service cost (ABC is burdened with that task), but explores management's use of ABC information. ABM focuses on managing activities to reduce cost. Using ABC costing to improve a business is called ABM.

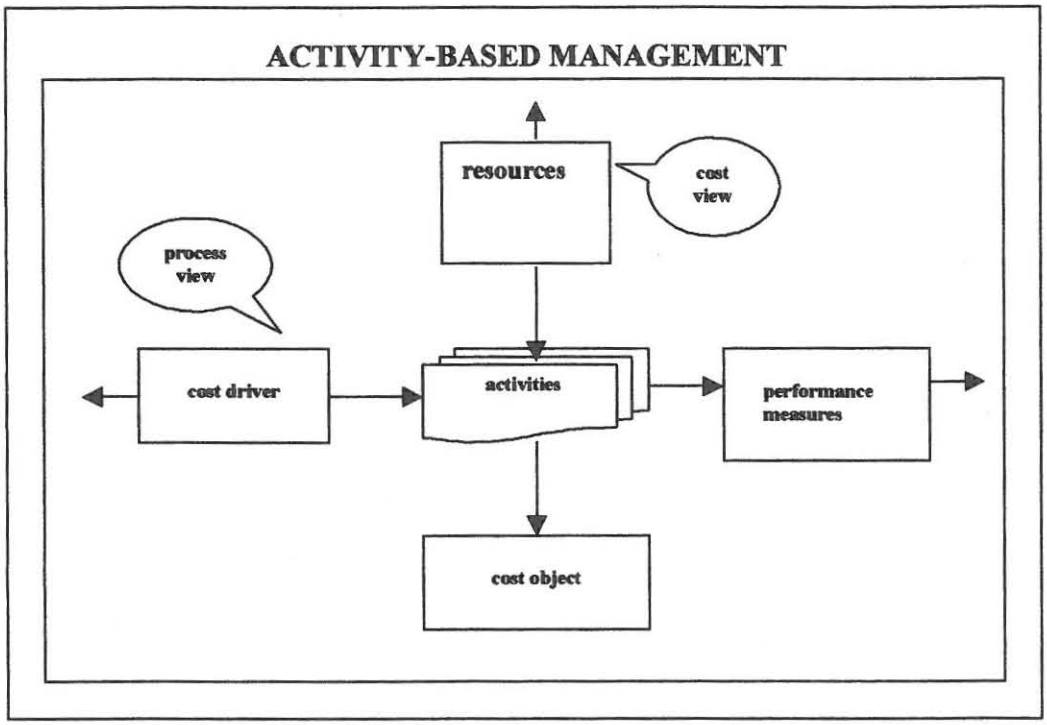
Turney (1996:139) describes ABM as a managerial tool that brings the full benefits of ABC, (advantages of ABC paragraph 3.4.1. page 74 - 76), to an organisation. ABM is aimed at two organisational goals. Both are common to the organisation.

- The first goal is to improve the value received by customers, and
- The second goal is to improve profits by providing and improving this value to customers.

Both these goals are reached by focusing on the management of activities. ABM includes cost driver analysis, activity analysis, and performance analysis. ABM draws on ABC as a major source of information (Turney, 1996:139). ABM adheres to the belief that managing activities is the route to profitably improving customer value. Each activity contributes in its own way to this overall goal. Each makes a measurable contribution to its customers – be it quality, timeliness, reliable delivery, or low cost.

Activity-based management

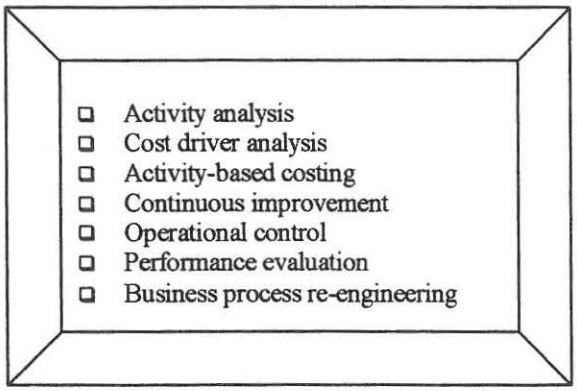
(Turney, 1996:141 Adapted)



Barfield *at al.* (1997:1037) describe ABM as a discipline that focuses on the activities incurred during the production / performance processes, a way to improve value received by the customer, and the resulting profit achieved by providing this value. A primary component of ABM is activity analysis, which is the process of studying activities to classify them and to devise ways of minimising or eliminating non-value-added activities.

The Activity-based management portrait

(Barfield *et al.*, 1997:229 Adapted)



In his definition of ABM, Ruhl (1995:80) includes the planning, improvement, and control of organisation activities to meet customer and external requirements. An ABM hierarchy of information provides a framework for ABM information systems. The ABM hierarchy of information is described as a pyramid consisting of tasks at the base of the pyramid; proceeding up the pyramid towards the top are activities, business processes, department / cost centres, and functions.

4.3. Need for activity-based management

Boltin (1995:1) maintains that today's business environment necessitates new forms of cost management and measurement. The many facets within the business environment are familiar to business executives, but these are worth considering because each one has a direct relation to the importance of accurate cost information. In addition, a generation ago, only a small subset of these facets were operating in any given industry. Today, the cumulative weight of these forces is causing emissive pressures. These pressures include the following:

Unrelenting price pressures

Customers are tougher and better informed, the regulatory environment is changing, most industries report excessive capacity, and global competition continues to redefine the playing field.

Rising customer expectation

Customers are demanding tailored products and services, reduced response time, bulletproof reliability, and higher performance at the same or even lower prices.

New production environment

Developing and sustaining a relative advantage is becoming increasingly difficult. With more product and service variety, greater product complexity, and more ways to go to the market, the choices can become overwhelming.

Booth (1996b:32) agrees that ABM is a useful management tool, and that it addresses a functional need. This need is based on how to manage a business during the latter part of the industrial revolution. Further examples of the pressures experienced in the business environment today, include the following forces that are at work today:

Over capacity of production relative to supply

While economists insist that this is only a temporary phenomenon, for the medium term, there seems to be an ability to supply goods that exceed the ability to consume.

Global competition

Trading barriers have fallen, with the result that the over-capacity of production has led to higher competitive trading conditions.

Focus on customer service

As many companies become able to produce goods of comparable quality and specifications, there has been a desire by companies to compete on customer-services basis, with a consequent rise in these costs.

Complexity

The growth in administrative functions is not confined to a customer-service basis as companies expand their support processes and their product range in order to compete.

Technological changes

The fast pace of technological changes is presenting opportunities in the form of new technology and new threats to those who do not keep up with these technological advances. These advances are completely reshaping organisational needs to underpin both the core and support processes.

Shortening of product life cycle

TECHNIKON

An effect of technological changes is the reduction in product life cycles. Not only does this make lead time reduction a prime requirement, but also the intensive product innovation forces an organisation to adapt, change and learn.

It is thus hardly surprising that an approach (embodied through tools and techniques) should have been developed to analyse an organisation, simplify it, improve value-for-money and, above all, adopt a cross-functional approach. Booth (1996b:32) continues that this approach happens to be called ABM, a satisfactory title except that it emphasises how the approach works, not what it does.

ABM is a mirror. In contrast to the familiar focus on cost accounts, ABM systems provide viewers with a new reflection of the activities that consume resources. Pryor (1997:5) continues that traditional costing focuses on resources while ABM focuses on activities.

Traditional costing versus activity-based management

(Pryor, 1995:5 Adapted)

Traditional costing focus on resources:

Sales order department

Salaries

Wages

Space

Depreciation

Insurance

Supplies

ABM focuses on activities (what is done that consumes resources)

Sales order department:

- Taking orders
- Expediting orders

- Correcting errors
- Issuing of creditors
- Amending orders
- Answering queries
- Supervising employees

ABM information systems expose irrelevant habits and outdated attitudes. Traditional systems sabotage understanding and promote a twisted perspective of reality. Pryor (1997:2) lists the 'Top Ten Outdated Management Accounting Habits and Attitudes' exposed through ABM, as follows:

1) The management by headcount and cost by function is irrelevant. What is relevant is managing the activities that consume the resources.

2) The reporting and management of indirect versus direct headcount are irrelevant. What is relevant is managing the activities of an organisation, not the classification of the people who perform the activities.

3) The reporting and management of fixed versus variable costs are irrelevant. What is relevant is managing used and unused activity and process capacity.

4) Holding departmental managers responsible for budgets is irrelevant. What is relevant is recognising that the root cause of most departmental activities is not under the control of the people who perform these activities.

5) Traditional budgets represent an irrelevant benchmark for an organisation. A budget does not represent the best an organisation can be. People must recognise that all organisations contain significant non-value-added costs.

6) More detail, data, and decimal points do not make for a better accounting system. Management of the 8-10 significant activities by cost centre and the 10-15 significant cross-functional business processes is more relevant.

7) Closing the books in three days is irrelevant. The goal is not to account for cost after they happen, rather it is to prevent costs before they happen.

8) Traditional accounting systems that encourage managers to control the vertical organisational chart are irrelevant. What is relevant is management of the lateral process company.

9) The allocation of functional overhead cost to products after development is irrelevant. Designing products that fit the existing functional activities and processes of the organisation is relevant.

10) Limiting cost management to the organisational 'profit and loss' is irrelevant. Processes do not begin and end inside the company. Activities performed by suppliers and customers are also relevant.

4.4. Activity-based management in action

ABM sees as its main function the identification of activities and the elimination or reduction of non-value added activities. Through the execution of activity analysis and compilation of a value added chain, these activities can be identified. After identification has taken place, proposals can be put to management with the main aim of reducing unnecessary cost of a product or service.

4.4.1. Activity analysis

ABM identifies activities involved in a poor quality situation and links those activities with operational performance measures and cost. Using ABM, the effect of poor quality becomes apparent (Carolfi, 1996:12).

Carolfi (1996:12) maintains that an activity analysis can be used to achieve the following three objectives:

Analyse symptoms

Measures performance and cost of resources consumed in performing significant activities resulting, in or caused by, poor quality to identify aspects of the process where the cost is the highest or where cost result from poor quality.

Evaluate processes

Data on performance measurements and cost allow organisations to identify opportunities with the greatest potential for improving quality and reducing cost.

Prove effectiveness

Cost and performance measures can determine the efficiency and effectiveness of major activities or processes and can be used as indicators of continuous improvement.

Through these objectives, Carolfi (1996:12) believes that information is provided which enables an organisation to effectively adapt to the constantly changing business environment by continuously examining possibilities for building a competitive advantage.

Ruhl (1995:2) describes ABM information as a pyramid, consisting of tasks at the base of the pyramid; while activities, business processes, department / cost centres, and functions fill up the top sections of the pyramid.

The tasks, at the bottom of the pyramid, are the steps necessary to perform an activity. Activities are what an organisation does (i.e. taking of orders, issuing of reports). A business process is a collection of related activities operating under a set of procedures to accomplish a set of objectives (such as, process a customer order, design a new product line) (Ruhl, 1995:2).

Brimson (1991:78) suggests that activity analysis identifies the significant activities of an organisation to establish a clear and concise basis for describing business operations and for determining their cost and performance. The process of analysing time use is known as activity analysis. It fosters a common understanding of how an enterprise functions in order to improve performance, including profit, quality, and timeliness. Activity analysis is used to:

- Understand the current cost and performance of significant activities.
- Provide a basis for determining alternative activities to lower cost and / or improve performance.
- Provide a basis for improving methods to streamline current activities.
- Identify discretionary, secondary, and non-value-added activities.
- Identify cross-organisational issues.

Activity analysis leads to activity management, which is the effective and consistent organisation of enterprise activities in order to use its resources in the best possible way to achieve its objective. The intent is to change under-planned and externally determined daily operations to goal-orientated and systematically planned ones. Activity management reallocates time and systemises work methods to improve the effectiveness of activities even in a dynamic environment (Brimson, 1991:79).

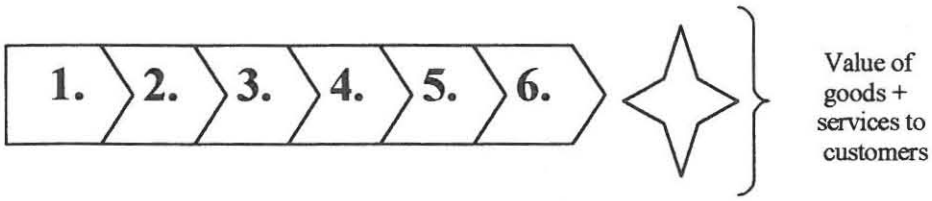
4.4.2. Value chain analysis

Activities may also be classified as value-added or non-value added activities. Ruhl (1995:2) maintains that organisations frequently spend as much as thirty five percent of their resources on non-value-added activities. A manager's goal should be to drive this non-value-added percentage down to zero.

Dyckman *et al.* (1994:723) describe value-added activities as those activities that directly contribute to the manufacture of a product or delivery of a service. Non-value added activities should be eliminated or minimised because these activities increase input costs without increasing output. Productivity measures with activity-based management emphasise the importance of a rapid flow of value-added activities and a minimisation of non-value added activities.

The Value Chain

(Horngren *et al.* 2000:7 Adapted)



Horngren *et al.* (2000:7) name the components of the business value chain as follows:

1. Research and development.
2. Design of products, services and processes
3. Production
4. Marketing
5. Distribution
6. Customer service

Selto (1995:2) believes that Michael Porter was the first author to popularise the concept of value chain components in ABC and ABM. Porter described organisations as causal chains of activities that add profit or customer value through transformation of inputs into delivered services or products.

Porter argued that the strategic organisational design issue is configuring an enterprise's value chain effectively and efficiently. This means minimising or removing activities that do not add value to services and products and enhancing those activities that do add value. An organisation with an improved value

chain should be able to gain competitive advantages in both cost and quality to the extent that it is able to meet or exceed customers' expectation at the lowest cost (Selto, 1995:2).

An enterprise's activities convert inputs into outputs: value is added to the inputs in order to convert them into outputs (products and / or services), which are purchased and consumed / used by customers. The chain of activities that is performed to add value to inputs in order to arrive at the final output, is referred to as the value chain (Glad and Becker, 1994:12).

Glad and Becker (1994:12) continue that if an organisation wishes to be competitive and enjoy that edge, it must carry out activities in a more cost-effective way than its competitors do. It is clear that such an organisation needs to have a value chain in which:

- There are a minimum number of activities
- All activities are effective, and
- All activities are performed at a relatively low cost.

Porter classified the full value chain into nine interrelated primary and support activities. Primary activities are related to actions that the organisation performs to satisfy external demands, while secondary activities (support activities) are performed to satisfy the internal 'customer'. (Those activities required to ensure the efficient performance of the primary activities), (Glad and Becker, 1994:13).

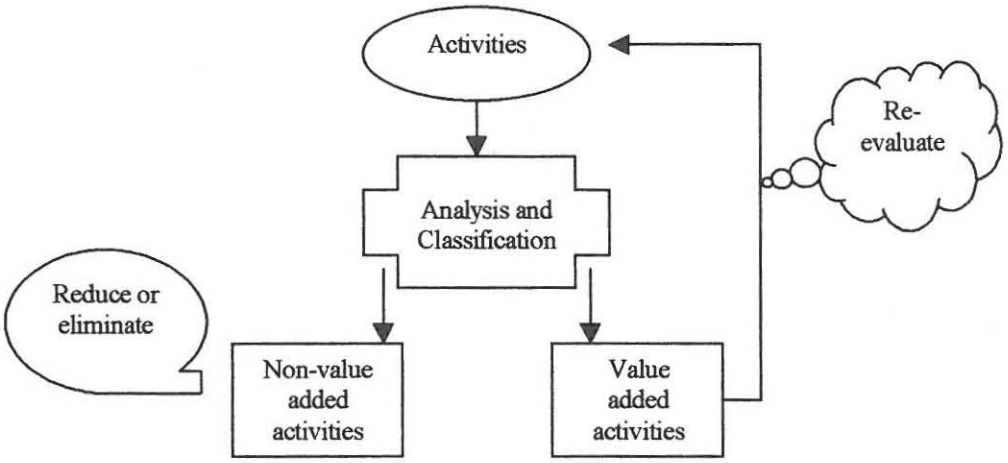
Value-added analysis requires an open-minded approach, because many business activities are justified by logic, rather than by real cost information. The statement often heard in this respect is 'this is how we have always done things' or 'we are currently doing it, therefore we must continue' or 'it always worked when we did it like this' (Boltin, 1995:3).

Maher (1997:269) emphasises that managers should constantly be questioning the activities performed. Managers should ask the question; do these activities add value? Managers should analyse activities and classify them as value added or non-value added activities.

If they do not add value, attempts should be made to eliminate or at least reduce these activities. If they do add value, then they should be re-evaluated continuously to ensure that they are and remain value added activities (Maher, 1997:269).

Are activities value added?

(Maher, 1997:269 Adapted)



Boltin (1995:3) maintains that several questions must be asked during value-added analysis. The first group of questions in this analysis ask if an activity should be performed at all, is there perhaps an alternative that could be considered. Later questions focus on how things are done. These questions can be formulated as follows:

- Can this activity be eliminated by changing (or not doing) something upstream that triggers this activity altogether?
- Should an organisation buy or make? Is this properly an internal or an external activity?
- Does an outside party require this activity to be performed?
- Is this activity well conceived? Can the work content or sequence be changed, improved or automated?
- Is the activity suitably productive and efficient?
- Are the resources balanced with process demands and structural variability?

- Does the organisation of the business or other units support the best arrangement of activities? (Many businesses redraw organisational charts with little reference to the realities of their business processes.)

A non-value-added activity adds costs but no value to the customer or the organisation. These activities consume resources and time, and limit the organisation's ability to be as competitive as possible. Activities that could result in non-value-added costs vary from one organisation to the next.

Increased global competition has made quality an important competitive dimension. An organisation can increase its financial well-being by focusing on improved quality and at the same time controlling cost. Continual striving for improvement in quality, and the control of cost, are critical strategic issues for management to consider in the current competitive environment.

4.5. Implementing activity-based management

By focusing on activities relating to performance goals, ABM helps organisations achieve higher standards and profitability to meet customer needs. Carolfi (1996:12) suggests that ABM identifies the costs of poor quality in five easy steps. These steps are as follows:

Step 1 – Defining poor quality problems

Although any business process will be analysed, focusing on a process that already exhibit poor quality characteristics will provide the organisation with the largest cost savings.

Step 2 – Identify activities

The results of this step is a list of activities, from inputs to outputs, that are involved in a process that led to, or was caused by, poor quality problem identified in step 1. There are several methods that can be used to identify activities. These include; interviews, brainstorming, questionnaires, walk-abouts, and observations which can determine major activities associated with poor quality.

Step 3 – Determine operational performance measures

Once the quality problem has been identified, the next step is to determine what performance measures to use for evaluating continuous improvement. There may be one or more operational measures that effectively and efficiently measure improvement depending upon the type of quality problem experienced.

Operational performance measures are concerned with physical measures of input, process, or output, and should link performance to the objective of improving the quality problem.

Step 4 – Estimating costs

Cost estimation focuses on the obvious immediate cost of poor quality activities. These costs can usually be classified into one of three areas; wages, other resources, or lost sales. When the specific activity associated with poor quality has been identified, two strategies, namely total resource costs and unit costs, now come in handy for cost estimation.

- Total resource costs – This strategy uses the total annual cost of resources within a category and the percentage of those resources consumed by poor quality activities for its calculations.

- Unit costs – This strategy focuses on the number of times a deficiency occurs and the average cost per unit for each activity associated with the deficiency.

Step 5 – Analyse results

ABM's major purpose is to assist managers in making decisions that include:

- What is causing the poor quality
- Where are the most costly aspects of a specific problem
- What specific costs can be eliminated as a result of an improvement project
- Which improvement project will be cost effective

In this step employees as well as managers are encouraged to find ways to improve activities and overall performance. This emphasis on activities helps management to identify non-value-added activities that reduce costs and improve performance.

Ruhl (1995:3) agrees with both Boltin (1995:5) and Carolfi (1996:12) in regards to implementation of recommendations regarding activity-based management. Ruhl (1995:3) has identified five steps of his own for continuous improvements to activity-based management. These are named as follows:

Step 1 – Identify improved opportunities

Step 2 – Identify root causes

Step 3 – Identify possible solutions

Step 4 – Implemente the best solution

Step 5 – Monitor the improvements

4.6. Three faces of activity-based management

Reeve (1996:1) maintains that part of the confusion surrounding ABM is that it is really not just one approach, rather three approaches – all with different aims and methodologies. These three approaches may be part of a single migration pathway, but are more likely to be separate approaches toward addressing the same objective. If this is the case, it should not be surprising that committing to one implementation strategy limits the organisation's ability to move to a different strategy. This could account for one of the reasons why organisations experience bad starts with ABM.

If an organisation commits to ABM as an organisational improvement tool, it will have difficulty later marshalling the organisational commitment for developing an ABM system. An organisational effectiveness methodology and a system have completely different aims and require a different commitment of resources. The same is true about ABM models (Reeve, 1996:2).

4.6.1. Activity-based management as an organisational improvement methodology

By using ABM as an organisational improvement methodology, business processes are described as a network of activities influenced by cost drivers. The methodology focuses on eliminating the influences of undesirable cost drivers as an approach to cost management. Process performance measures are identified with respect to time, cost, and quality. This methodology uses cost driver analysis and value-added vs. non-value-added analysis to support cost reduction objectives. ABM as an improvement project is consistent with the horizontal view, or process dimension, of the ABM cross model (Reeve, 1996:3).

Krausert (1996:2) suggests that from a process improvement standpoint, the economic value chain should be considered. The value chain extends further beyond the organisation's doors, to suppliers' and customers' businesses. Steps need to be identified whereby activities are improved or eliminated throughout the value chain that will minimise costs and maximise profits to everyone involved. Activity cost information and cost driver analysis from the ABM system will provide much of this information.

Various tools are available to assist management in the process improvement challenge. Cross-functional teams consisting of all levels of employees are critical. People familiar with the process and those with little or no knowledge about the process being examined must be active in this team.

Krausert (1996:2) maintains that different tools and methods are available, which include fishbone charts, story boarding, brainstorming and others, to focus efforts on identifying root causes of activities and solutions for improvement. Identification of root causes is critical for real improvement to take place thus most of the time and effort is placed on this process. Cost driver information from the activity-based management system help focus on root causes.

Boltin (1995:2) emphasises that while ABM can be used within a costing and accounting paradigm, it provides a much broader leverage when used to support process improvement. If processes are the centres of business improvement, the next logical step suggests that activities are the building blocks of processes. Hence, activity analysis forms the first step in the developing of an activity-based improvement process.

Once managers understand and analyse what is being done, activities can be eliminated or improved as the basis of a more comprehensive process redesign or improvement initiative.

4.6.2. Activity-based management as a model

Reeve (1996:3) suggests that by far the most widespread use of ABM is as a model. The model, being an activity-based description of the organisation and can include anything from an activity analysis to product (or cost object) costing. This information for a model comes from an organisational diagnosis that involves interviewing people to discover activities.

Most models provide the organisation with limited relational capabilities (the activities can be related to functions, departments, and resources). The ABM model can be described and understood as an activity 'snapshot' of a business. The term 'model' implies that it is just that – a model, and not a system (Reeve, 1996:3).

4.6.3. Activity-based management as a system

Reeve (1996:5) describes the last face of ABM as a system that only now starts rearing its head. It is more than a model because these systems are updated frequently, is fully rational, is flexible to change, and has automated activity / resource feeds from other systems (such as accounts payable, payroll), and most importantly has flexible online reporting and query capabilities. Information about activity drivers is collected automatically from manufacturing, distribution, and sales systems in the true ABM system. Integrated ABM presupposes that these other information systems exist and can be tied to the ABM system.

Wiersema (1996:2) suggests that emphasis on data in conventional approaches to ABM is necessary - its elimination will reduce implementation costs and improve both the efficiency and the effectiveness of the ABM system. Instead of data, the objective should be cost assignment. ABM becomes an integrated system that assists managers in their decision-making function in the organisation.

4.7. Efficiency and effectiveness

Organisations that want to use ABM to rearrange and reconfigure their value chain are faced with numerous questions. The most significant of these questions revolve around the issues of efficiency and effectiveness.

Selto (1995:3) maintains that the most critical questions for organisations wishing to implement ABM, is whether this new system will streamline the organisation by minimising non-value-added activities and whether the new system will enhance the organisation's ability to achieve its business objective through redeployment of resources to value-added activities.

Selto (1995:3) believes that theoretically speaking the answer to these questions is – yes. Practically speaking, the effectiveness of activity-based management does not only rest on technical issues (such as the consultants, information technology, and the level of detail), but also on the effort and willingness of management to create an environment conducive to ABM and make critical decisions about resource allocation.

ABM can only be successful (efficient and effective) in organisations with the following characteristics:

- Shared goals and objectives,
- Focus on activities throughout the organisation,
- Uses group or team analysis,
- Have reliable and accessible information,
- Have empowerment of workers to access information and make critical decisions, and
- Have employment security.

Brimson (1991:205) and Kabat (1983:41) define efficiency as the degree to which inputs are used in relation to a given level of outputs, and effectiveness is described as the degree to which a predetermined objective or target is met.

Selto (1995:3) concludes that much research still remains to be done to identify and verify the factors that affect ABM. No one knows with much assurance whether ABM has been effective.

Selto (1995:3) defines effectiveness as whether an organisation has met its objectives and is moving toward its goals. If ABM is effective, then after implementing ABM, an organisation should be better able to meet its objectives. This capability should result in improved performance in quality, productivity, cycle time, product or service costs, and profitability.

With proper management attention, Anderson (1995:2) believes that ABC and ABM should improve over time. Management should repeatedly refine the way ABC is practised. Specifically, management can improve ABC and ABM efficiency by focusing on, among others, the following:

- Training those responsible for and associated with ABM,
- Standardising procedures for common ABM information,
- Standardising procedures for applying ABM information, and
- Standardising procedures for requesting ABM information enhancements.

Turney (1998:1) recognises the importance of a positive organisational and behavioural climate within an organisation. The author has identified five ways of improving effectiveness of ABC and ABM, thereby increasing the likelihood of success. These improvement suggestions are summarised as follows:

- Establishing effective leadership
- Involving people in all phases of ABC and ABM implementation
- Improving the efficiency of ABC and ABM implementations
- Expanding the relevance of ABC and ABM information
- Developing applications of ABC and ABM

4.8. Obstacles and solutions to activity-based management implementation

Turney (1998:1) maintains that a recent survey showed that the biggest obstacle to implementing ABC and ABM successfully were organisational factors and not technical factors. The primary factors identified were the apparent absence of senior management buy-in (involvement), followed by the lack of employee ownership of the process. The only technical obstacle mentioned by the author was the difficulty experienced in collecting, extracting and analysing the data.

Player and Keys (1995:1) have summarised the major pitfalls encountered by organisations wanting to implement an ABM system successfully. These pitfalls were identified in many interviews conducted with accountants who were implementing, users of this information, consultants, and managers who had rejected ABM.

Player and Keys (1995:13) describe these pitfalls as being technical in nature, and which may cause serious problems in the implementation of ABM. Once these pitfalls are fully understood, they tend to be easier solved than behavioural issues. The ten biggest pitfalls associated with ABM development and implementation, may be summarised as follows:

- Failures to begin with a pilot
- Activities are defined in too much detail
- Problems in collecting activity data
- Inaccurate assignment of costs to activities and cost objects (product and customer)
- Unavailability of detailed data
- Costs may not be assigned to the right year
- Software problems
- Poor project management
- People do not have enough time

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Thorne and Gurd (1995:1) agree that there are many obstacles that organisations must overcome in order to successfully develop and implement ABM. There are various lessons that can be learnt from organisations that have experienced the growing pains involved with development and implementation of ABM systems. These lessons are summarised as follows:

Organisational culture

ABM projects are likely to succeed if they are part of a wider organisational-change program. More open organisations are more likely to have successful implementation of this system. An organisation that is committed to continuous improvement and to achieving world-class competitiveness provides more fertile ground for ABM, than an organisation with no such commitment.

Choosing the right time to implement activity-based management

If cost saving efforts is perceived as a threat to employment, employees will be defensive. A possible strategy that could be followed in this respect could be to initiate other projects such as continuous improvement or total quality management at the same time as ABM projects are initiated. Mergers, take-over bids, or dramatic changes in organisation structures may reduce the likelihood of successful implementation.

Attitude towards the objective of the implementation

If the focus is turned to cost management, enthusiasm among managers is heightened. Employees also tend to respond better to ABM if they believe that it is in their own best interest as well as in the best interest of the company to implement ABM.

Choice of a project team

The team should come from a cross-section of departments. These team members should have a variety of skills, including: good communication skills, good rapport with fellow employees, ability to think laterally and to encourage others to challenge the status quo, and have sufficient time to effectively contribute to the project.

Creating the right environment

Those interviewed should be chosen because of their in-depth knowledge of the activities in their area and their communication skills. Inclusion of shop employees leads to information about how to eliminate non-value-added activities.

Maintaining enthusiasm during the project

Important implementation issues that tend to be neglected at the end of the project often include, validation of data from other sources, testing the linearity of the cost functions, and developing of performance measures.

Use of ABM results

The production and sharing of results from the implementation may increase commitment on the part of managers. Feedback of information should also be prompt and should be directed to all levels within the organisation.

4.9. Summary

ABM has evolved from an improved product costing methodology to a management style that focuses on waste and non-value-added time reduction in the organisation. Understanding the activities that management pay people to do and what they get in return for the resources commitment is what makes activity-based costing a very useful management tool.

ABM identifies the structure of an organisation's business processes that provide a method to measure and improve the organisation's processes to meet, or even exceed customer requirements (satisfaction). The goal of ABM is to accomplish this in the best responsive manner (time) with the least resources (cost) to provide consistent results (quality). ABM is planning, empowerment and improvement of an organisation through the analysis and measurement of its activities and related business processes.

The traditional view associated with organisations was one of a functional or departmental structure and which was managed from top to bottom. This was done to give managers control over a particular function or department that is physically located in one place and where the output is focused and specific.

The limitations of this traditional view are:

- It is not customer driven,
- It does not reflect the way an organisation operates,
- It does not identify the interrelationship of various departments, and
- Its performance measures are self-fulfilling, often at the expense of others.

In conclusion ABM can be summarised as a system that provides measurement information to:

- Be customer driven and not internally driven,
- Manage what activities are performed, not how much is spent,
- Improve business processes and not departmental performance,
- Identify and minimise non-value-added activities and not allocate them into oblivion,
- Empower those who perform the activities to improve those procedures,
- Support the process of continuous improvement,
- Provide the co-ordination and financial measurements of other organisational improvements,
- Program through the organisational improvement.

5. Management accounting and activity-based management accounting

The most important aspect in activity-based techniques - namely ABMA, is presented in this chapter. Special focus will be placed on management and the management process. Performance measurement and the role of management accounting in performance measurement are also featured here.

5.1. Introduction

ABC and ABM have been around for about ten years, since the 1980's, and are two of a variety of tools that managers may use to improve their business. ABMA has come to the fore only in recent times and can be distinguished from other famous business acronyms due to its ability to measure the financial impact of the changes that are made in a business (Krausert, 1996:1).

ABMA is used by management, in conjunction with techniques such as JIT, TQM, BPR, and TOC to provide measurable links to financial statements, to make it understandable to everyone that needs the information (Krausert, 1996:1). ABMA has become a strategic and tactical tool for managing resources needed and consumed in the business. It yields long-term payback potential through changing the behaviour of people in the company by focusing their efforts on value-added work.

ABC and ABMA are techniques that are at the forefront of management innovations. They have developed into the number one instruments for companies seeking a clear understanding of profit performance (Turney, 1996:1).

ABMA assists all interested parties within an organisation to understand which resources are consumed, and the economy of those resources and outputs produced by each activity and process within the organisation, thus enabling better decision-making by management and management accountants.

Ostinelli and Toscano (1998:9) believe that ABM stands for a type of management accounting that uses the principle of the *Activity-based* approach and is based on the measurement of cross-functional activities and processes. This is a type of management accounting that can identify and measure the connection between the product-service offer to the market and the organisation of activities and business processes that the company decides to adopt to produce to deliver this offer. ABMA focuses management's attention on the interdependence of the various organisational units involved in the performance of activities and processes according to a cross-functional vision.

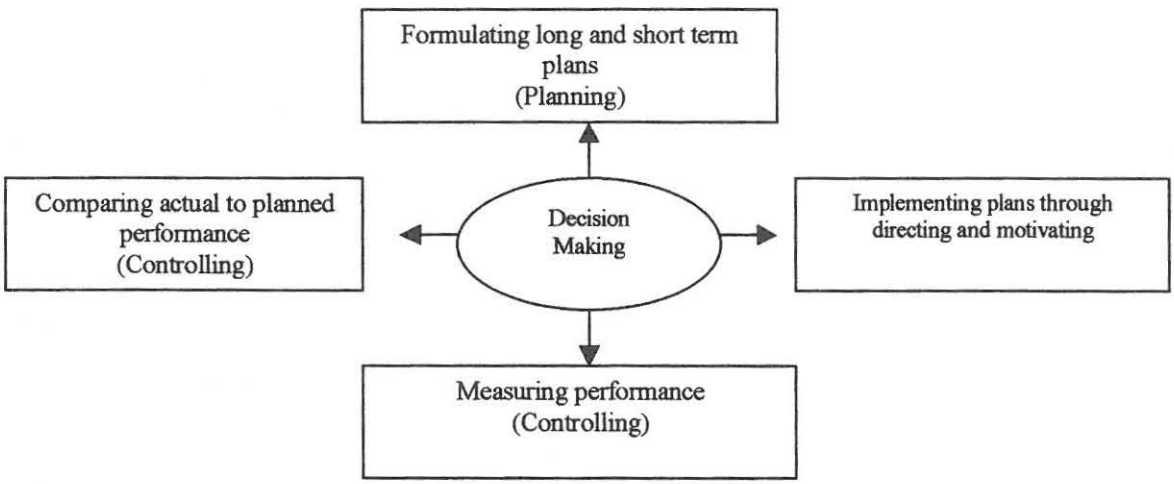
5.2. Management accounting

The role of management accounting as information provider within the organisation is to facilitate and assist with activity analysis. The assessment of ideas for improvement and setting and monitoring of activity / process budgets, objectives, outputs, performance measures, benchmarking and best practice targets – non financial as well as financial: qualitative as well as quantitative: - in line with overall organisational objectives (Turney, 1996:1).

Garrison and Noreen (2000:6) explain management accounting as being concerned with the providing of information to managers – those persons inside an organisation who are directly responsible for the control of the organisation's operations. The role of the Management accountant can be summarised using a simplified model:

Management accounting

(Garrison and Noreen, 2000:6 Adapted)



Moreno (1999:1) believes that by making it easier to envisage processes and behaviour, management accounting can actually serve as a very important informative base for the evaluation and control of global

and individual performance. Management accounting also plays an important role in motivating members within an organisation, encouraging specific forms of conduct and penalising other forms of conduct.

A process of induction of behaviour can be created where the goal is to motivate the individual towards collaboration in favour of the organisation, hereby developing his initiative and responsibility and from which he receives the corresponding rewards. In this way, management accounting attempts to limit opportunistic behaviour – hereby avoiding dysfunctional decisions (Moreno,1999:1).

Moreno (1999:2) continues that management accounting is an instrument that signals expected behaviour and is useful in measuring results and regulating incentives, and plays an important role in the learning capacity for innovation. Its usefulness and importance as a mechanism for control and guidance in the learning process comes into its own in the specification of the system for measuring and evaluating performance, which when broken down into simpler form is none other than the specification of the objective function of the organisation.

Management accounting provides the informational requirements of management. In providing this information, the management team can run the affairs of the business operation or function effectively and efficiently. It also plays an integral part in identifying, presenting and interpreting the information that can be used for the formulation of strategy, planning and controlling activities, decision-making, optimising the use of resources, disclosure to shareholders and other parties that are external to the entity, disclosure to employees and the safeguarding of the entity's assets.

From the above descriptions it becomes clear that the rapid dissemination of management information forms an important part of effective management. The management accounting system must be adequately geared to provide for this.

5.2.1. The business environment

Coyte (1995:5) explains that dramatic changes in the work place have occurred. These changes were largely in response to pressures created by an increase in domestic and global competition, organisations scrutinising all aspects of their workings – from their product / market strategies to their operations in order to increase value creation for customers, owners and other stakeholders. Major moves are also taking place in order to remove activities and processes that do not contribute to value creation, and to align value-creating processes with strategy.

Cotton (1994:1) believes that the changes that are occurring in management accounting have been triggered by a variety of forces. These forces include; the globalisation of the markets, the pace of technological innovations, and the extraordinary advances in computer technology and software. Manufacturing organisations in industrially developed nations are now moving towards an automated production environment in which flexibility, quality and the efficient use of expensive capital equipment and skilled workers are the factors critical to success. These changes not only impact manufacturing organisations, but are also spreading to service organisations to include the likes of banks, insurance companies, medical centres, professional firms and even to some non-profit organisations.

Booth (1996a:2) agrees that since the 1980's the nature of competition faced by different organisations in all sectors of the economy have significantly changed. These changes have been discussed in both the business and the academic publications under the headings of 'globalisation, internationalisation, the new-world order, world best practice, world class organisations,' amongst others. These changes will make it difficult for organisations, regardless of size, to:

- Sustain the provisions of sub-standard value to customers,
- Base competitive advantage solely on some unique feature of their product or organisation, especially such features as niche markets and locations.

5.2.2. Changes in information technology

Booth (1996a:5) maintains that information technology (broadly defined so as to include communication technology) has been the most significant and rapid area of change in the last 20 years. The changes include the advances in computer hardware and software, general communication linkage system improvements, development of multi-media technology and the growth of the Internet (the so-called 'information super-highway').

The changes in information technology will:

- Increasingly make the world smaller as it becomes ever easier and cheaper to move large volumes of data around the globe,
- Increase the ease with whichever more data can be captured on every aspect of the operation of an organisation,
- Increase the ease with which this data can be accessed, manipulated, transformed, analysed and displayed.

Booth (1996a:5) continues that the greatest challenge and uncertainty and the potential for it to impact on the nature of work in the next millennium concern the issues surrounding information technology. It will cause an intensification of competition globally because it will facilitate:

- The ability to serve global markets,
- The control of global business, and
- The conception and operation of markets as regional or global rather than local (financial markets may serve as the best example).

5.2.3. Changes in organisational structures

Moreno (1999:6) points out that the role assumed by management accounting in organisations is clearly reinforced by uniformed control mechanisms that aids (foments) participation in the exercise of the decision process, or at least in some of its phases (initiation, ratification, introduction, and monitoring).

Booth (1996a:6) predicts that the main trends for organisation structures for now and the future are even further flattening of organisational hierarchies that have been built up in the last 60 odd years. This flattening of hierarchies will be accompanied by the formation of co-operative organisational networks, a trend that is currently becoming a very popular tool within organisations.

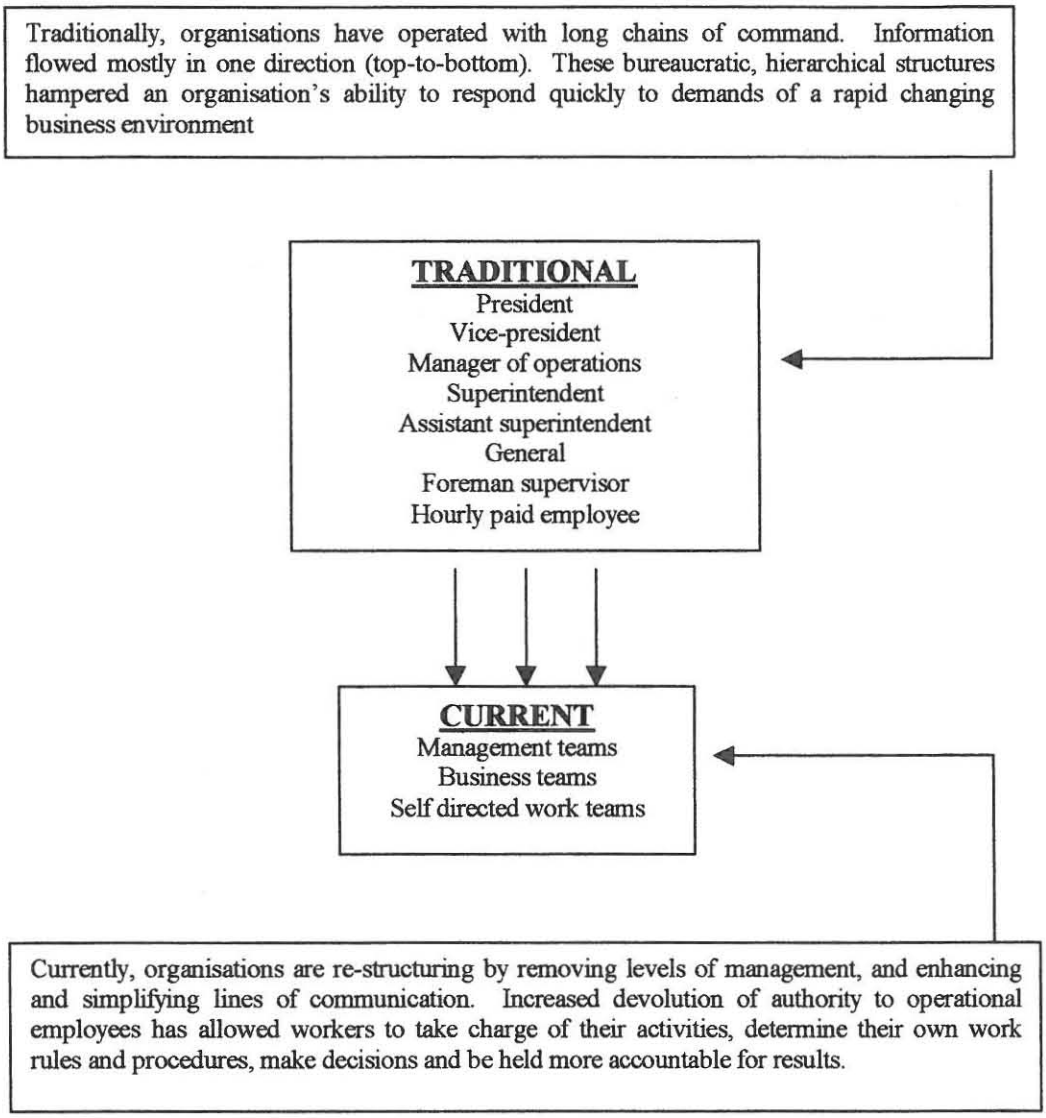
May (1997:2) also predicts that by the year 2007 the current period of flux will have resulted in organisational change. Many of the old hierarchies will have been replaced by flat structures, cross-functional teams, virtual mobile teams, empowered and highly skilled employees, working independently and making their own decisions.

These changes will be made possible by developments in information technology and communication advancements which will allow everyone to access information, to manipulate it, to make informed decisions, and to share these decisions with others (irrespective of where they are located) (May, 1997:2).

Coyte (1995:5) agrees that a great deal of delayering of organisational hierarchies has taken place recently. Together with this delayering came a great deal of employee empowerment at operational levels. Empowered employees, working in 'teams', supported by technologies that help align their activities with organisational strategies and goals, now perform many of the key value adding activities of an organisation.

Delayering of an organisational structure

(Coyte, 1995:6 Adapted)



In delayered and empowered organisations the activities of three types of teams intersect. The 'top management' team would have a mandate for strategic positioning and change and be 'freed-up' from much of the operational activities in order to action this role. Cross-functional business teams would focus on creating customer value and competitive advantage. Self directed work teams would focus on service delivery and operational improvements.

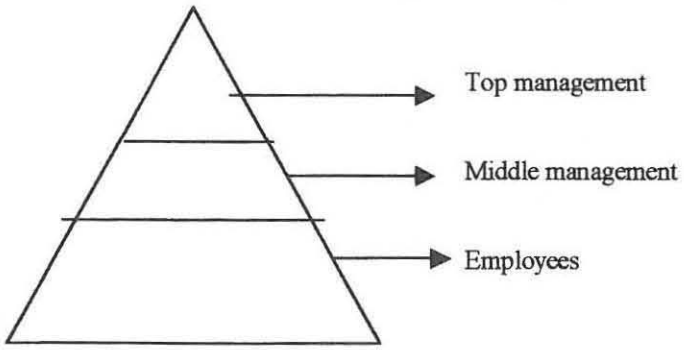
Booth (1996a:6) believes that flattening the organisation's structure may be effected in one of two ways:

- Removal of all non-value-adding activities / sections of structures, or / and
- Removal of other essential, but not core, functions via outsourcing. As competition moves towards processor knowledge-based advantages, new organisations will be developed to provide essential (but secondary services) to other organisations. This closer working relationship will overcome at least some of the information sensitivity issues that may be raised against the outsourcing of many current internal support functions. It may even be possible that even the accounting function be outsourced.

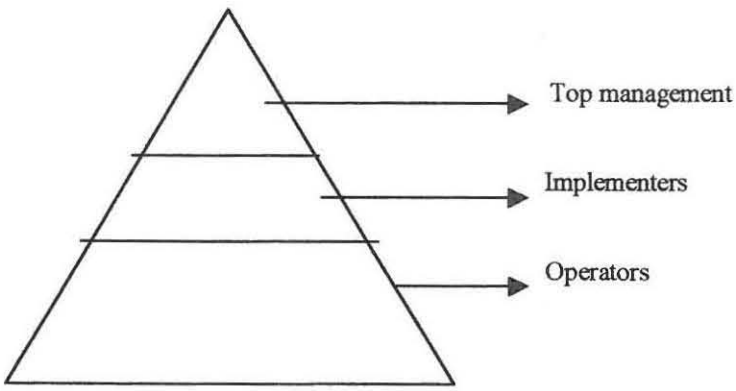
The new age corporation

(Booth, 1996a:7 Adapted)

Traditional structure (The chairman, board and CEO)



New structure (The leader and the operators)



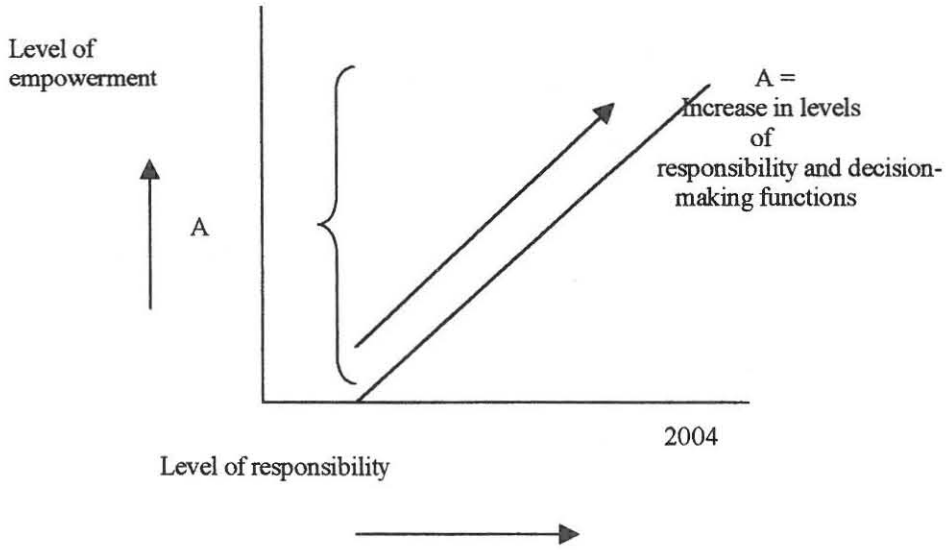
Booth (1996a:7) continues that the flattening of organisational structures will lead to greater empowerment of the smaller core of lower level managers (implementers) and the front line employees (operators) that remain. These personnel will be given greater scope to manage an increasingly wider range of decisions. Management will consequently become a generic sub-function of all employees rather than the province of specialised managers.

This will create a great change in the need for:

- Case and extensiveness of information access and analysis at lower levels of the firm,
- Relevant information for top management to evaluate the operations of the firm and direct strategy.

The newly evolving role of employee empowerment and responsibility.

(Booth, 1996a:7 Adapted)



5.3. Management accounting – Possible response

The forecasted changes in the business environment through changes in the general nature of competition, information technology and organisational structure have the capacity to dramatically change the nature of

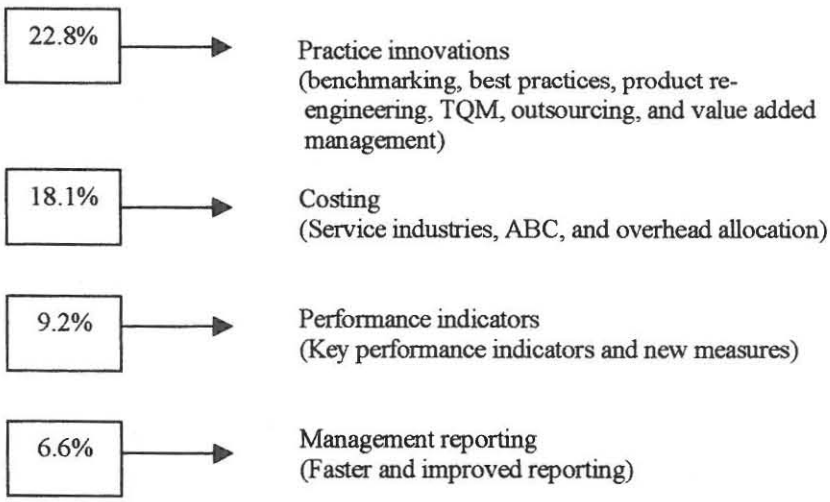
the management accountant. Booth (1996a:8) believes that changes in management accounting are driven by these challenges and are already being implemented.

Examples of current implementation can be seen in the formulation of better costing systems (activity-based techniques, target costing), the development and greater importance of non-financial performance measures (key performance indicators, critical success factors), and the changes in systems to support quality management initiatives (cost of quality, reduced month-end reporting delays).

The four top ranked areas of interest of management accountants' awareness of the challenges they face and the possible impact thereof is illustrated by Booth (1996a:8) as follows:

Top four areas of interest

(Booth, 1996a:8 Adapted)



Clarke (1995:1) believes that the 'relevance' of management accounting information has been subjected to severe criticism. Three main areas of criticism can be identified:

- Firstly, there are those who argue that the traditional method of absorbing overheads into products (typically using direct labour hours) distorts product costs. The alternative, namely ABC, provides

more accurate cost information. Since ABC provides more accurate information relating to the costs of various activities, it is used in the cost management and re-engineering of the organisation.

- A second point of criticism for management accounting is that it is too preoccupied with financial measures of performance. Supporters for change argue that non-financial measures of performance must receive greater attention since if an organisation improves operational measures like quality, delivery times etc., then financial results will follow.

- A third criticism of management accounting suggests that management accounting does not broaden their orientation. Supporters for change advocate that management accountants should broaden its range of relevant information to include data on the environment (including competitors) in which an organisation operates.

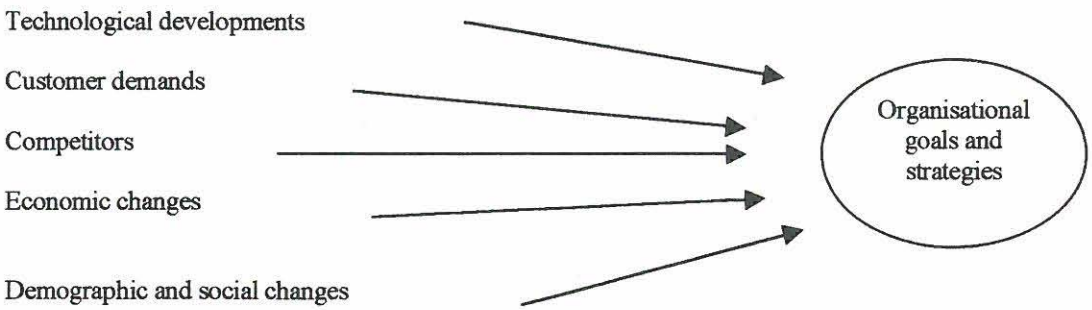
Clarke (1995:3) continues that management accounting should focus on areas that have traditionally been perceived as being outside the domain of the management accountant. These possible areas of focus could include environmental scanning, competitor analysis and strategic perspective on internal data.

Environmental scanning

Clarke (1995:3) maintains that environmental scanning involves the monitoring of the environment for surprises (or reassurances that there are no surprises). These surprises could be as a result of technological developments, changes in customer preference or significant economic changes. Information is also generated about demographic, social-legal, ecological and political environments in which an organisation exists.

Environmental scanning

(Source: own research)



Competitor analysis

An organisation can only set realistic and attainable goals and strategies in the context of the organisation's position relative to that of its key competitors and the variety of external influences in the environment. It is thus vital in the current market place that customers must be retained and new customers recruited (Clarke 1995:4). There are many possible sources of information in relation to competitors. These sources of competitor information include:

- Mutual customers,
- Own sales force,
- Industrial journals and government statistics,
- Trade exhibitions and physical analysis of competitors' product,
- Newspaper articles and press releases,
- Annual financial reports published by competitors,
- Industrial experts and consultants (scanners), and
- Banks and financial markets.

An increasingly popular method of competition analysis is through benchmarking. This is the process of discovery and examination of the best practices, especially among competitors that lead to superior performance. Booth (1996a:5) maintains that there are a few barriers to benchmarking. These barriers could include the development of accurate information that can lead to legal, ethical and practical problems.

Benchmarking also requires a depth of understanding that can generally be developed only through an information agreement between participating organisations. Benchmarking is nevertheless a growing activity within organisations.

Strategic perspective on internal data

Strategic management accounting should investigate the long-term implications of internally generated information. If an organisation places too much emphasis on its short-term profitability, it may be unwilling to invest to either improve its competitive position or to remove or minimise the potential impact of any adverse changes in its environment (Booth, 1996a:5).

5.4. Management accounting practices

Moreno (1999:8) concludes that changes that have taken place in the business environment conform to the great structural changes that have taken place in the last few years, mainly due to technological information changes and the need to adapt to an increasingly competitive environment. Greater environmental uncertainty and complexity will require a new form of economic activity for the organisation, as well as new information systems, planning, control, ultimately new accounting procedures.

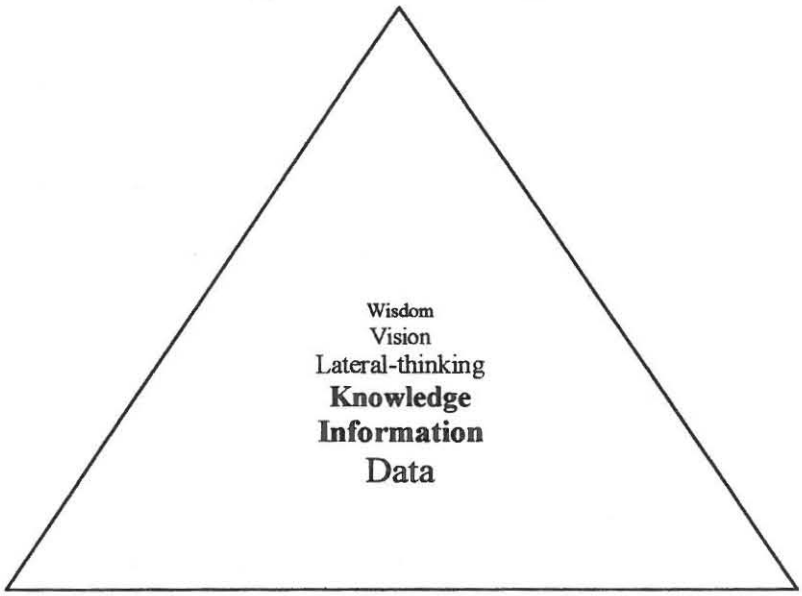
Booth (1996a:9) takes the extreme view that the specific discipline of management accounting will disappear. The accounting, quantitative base of current management accounting, must merge with other general management control issues and knowledge. Management accounting will become part of management in a new 'management control' discipline. This new discipline will still consist of a quantitative base, but will take greater advantage of information technology to supply more diverse and decentralised information to the 'new age corporation'.

TECHNIKON VRYSTAAT/FREE STATE

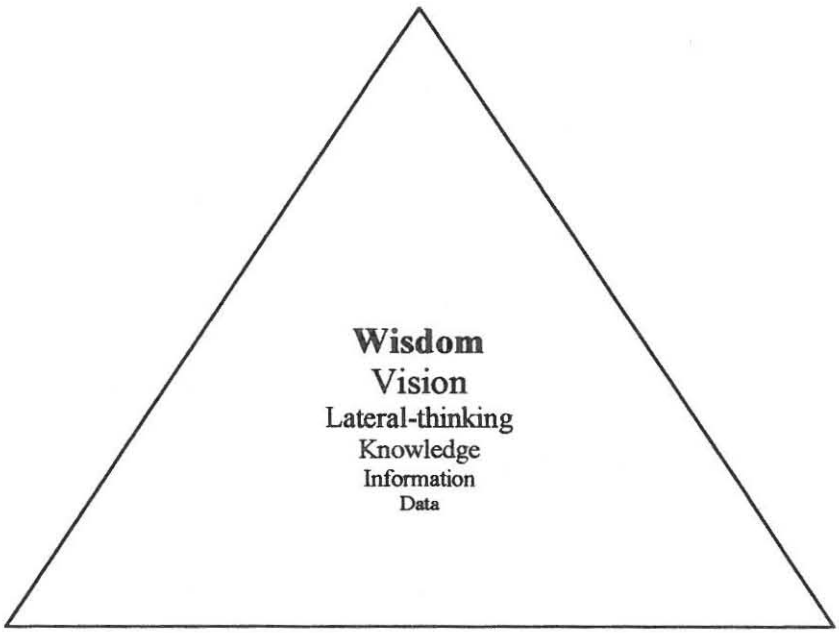
The knowledge pyramid in a 'new age corporation'

(Booth, 1996a:9 Adapted)

The traditional view
(By volume and attainability)



The new age corporation
(By power and leverage)



Booth (1996a:12) continues that the skill set of the management accountant will change radically to be more management and information technology based rather than only accounting based. The numbers of management accountants employed in the capacity of 'accountants' will be drastically reduced in favour or a broader thinking management individual. Management accounting will have to effect some changes to keep up with the rapidly changing business environment. These changes could include the following:

- Management accountants must increase their knowledge of all other functional areas within their organisation, particularly line management areas.
- Management accountants must become more pro-active in management core areas. This will necessitate working more closely with cross-functional teams and playing the role of facilitator rather than evaluator.
- Management accountants must increase their information technology knowledge and skills. They might even be required to specialise in systems development and implementation.

Armitage *et al.* (1994:31) describe the future of management accounting as business partners, coaches or advocates when he says:

"This does not imply that the Management accounting function as we currently know it will entirely disappear. Rather, we still foresee the need for a trimmed-down, centralised group of management accountants whose responsibilities will include some of the same treasury and financial statement preparation duties that are currently being performed. In addition, there will be a need for senior management accounting membership on task forces that require strategic management accounting insights when evaluating future alternatives or refining activity drivers. Management accountants will still be required to work with aggregations of financial information to test the overall efficiency of operations in meeting corporate objectives. This information will be fed back to the strategic planning process to help revise future goals and objectives."

5.5. Activity-based management accounting

5.5.1 Evolution of activity-based management accounting

Not much has, over the last five years, been written specifically about ABMA. Emphasis has rather been placed on Activity-based techniques, including ABC and ABM as a new form of costing that had its inception in the early 1980's.

ABMA has evolved over the last few years from a more accurate costing methodology, to a more scientific method of cost reduction, to an all embracing advanced planning, monitoring, and cost control system that includes TQM philosophies (May 1995a:1).

Brimson (1991:73) explains that TQM basically means perfect quality in products and services. It emphasises the importance of quality in every stage of the operations and mainly has two objectives: - to make things right the first time and to work for continuous improvement. TQM places emphasis on the need to treat all manufacturing functions as processes and strive to improve them. Traditional costing models – that separately collect material, labour and cost by product, instead of by process – are not compatible with total quality management. Activities are processes and are thus more compatible with total quality management.

May (1995a:1) maintains that an organisation should not be frightened by all the commotion surrounding ABC and ABM. ABM should actually be called ABMA. It is the duty of all accountants to refer to it as such. ABM(A) has evolved over the last five years from a more accurate method of product costing, to a more scientific method of cost reduction, ultimately to an all embracing advanced planning, monitoring and control system encompassing the following:

- Activity-based costing,
- Activity-based cost management,
- Activity-based budgeting,
- Activity reporting,
- Performance measurement and benchmarking,

- Continuous improvement,
- Product / customer and sector profitability, and
- Business process re-engineering.

May (1998:1) believes that system designers now need to consider an organisation's ABM requirements first, when specifying new systems, instead of treating these requirements as an add-on thought afterwards. May (1998:1) continues that after a decade since the introduction of ABC, activity-based techniques have progressed from being an add-on item to the management accounting system to becoming an all-encompassing advanced 'ABMA' system in itself.

The majority of organisations begin by introducing just one activity-based technique to the organisation to serve a specific purpose. For example, an organisation could use ABC for product costing and customer profitability or BPR for business performance improvement. Over a period of a few years, the organisation gradually adds other activity-based techniques like ABB. Many organisations average three activity-based techniques after a period of approximately three years (May, 1998:1).

May (1998:1) continues that many organisations take the final step by basing their whole management accounting system and information system on their activity hierarchy. Hereby effectively replacing traditional monthly management accounting packages that have long lost its relevance in managing an empowered organisation of the nineteenth century.

Generic software (that includes activity-based technologies), and modules of organisation-wide software are also being developed to encompass this new technological need. This technology is continuously updated by the experts and new features and functionality is added to meet the ever increasing demanding organisational requirements (May, 1998:1).

The latest releases of activity-based software from companies such as Armstrong Laing and ABC Technologies are multi-user, multi-model, with sophisticated report generators and connectivity to all of the

industry's leading databases. When used in conjunction with mapping tools like enterprise Modeller and Design IDEF, and spreadsheets like Excel, they become extremely flexible and suitable for running ABMA systems (May, 1995a:2).

May (1995a:2) continues that all those interested or involved in this type of software should be extremely grateful to those organisations that have helped to develop the above-mentioned technologies, techniques and software. Many mistakes have been made and many lessons have been learned. In addition to the expenditure of millions of pounds and innumerable hours of management time, working closely with consultants and software developers, on initiative after initiative, to arrive at the point at which we find ourselves at the present moment, is remarkable.

5.5.2. Characteristics of activity-based management accounting

The main characteristics of ABMA, as seen from an operating point of view, are summarised by Ostinelli and Toscano (1998:9) as the following:

- Cross-functional activities are added to traditional objects of performance measurement (the product and functional organisational units) and the costs linked to the different types of customer.

- Full costing for cost pools is adopted as a method of costing. However, in this approach, cost pools do not coincide with the functional organisational unit, but include activities carried out in several different functions and are grouped according to criteria of co-responsibility in terms of objectives and common goals to aim for.

- In addition to the direct costs, overhead costs (developed during the process) are assigned to the cost object (product, customer, distribution channel etc.) The parameters of operating complexity (activity driver) are used as a basis for the distribution of overhead costs where these contribute to the change in the level of operating complexity.

- Both financial and non-financial performance indicators are used to ensure a more effective evaluation of performance throughout the cross-functional process. This can be divided into parameters of process measurement and parameters for measuring results.

Ownership of information empowers employees to learn and make changes that continuously improve activities and processes by removing constraints. The role of management accounting as information provider within the organisation is to facilitate this process, assisting with activity analysis, the assessment of ideas for improvement and the setting and monitoring of activities / process budgets, objectives, outputs, performance measures, benchmarking and best practice targets - non financial as well as financial, qualitative as well as quantitative- in line with the organisation's objectives (May, 1998:1).

Ostinelli and Toscano (1998:6) explain financial and non-financial indicators clearly. It is often held that the reading of financial data only is no longer sufficient for a complete understanding of an organisation's performance. In the complex and dynamic organisation reality not all factors can be measured with traditional financial or accounting parameters.

Non-financial indicators of quality, customer satisfaction, innovation, flexibility, timing, quality of service, among others thus become necessary for the completion of the analysis of an organisation's performance and represent effective tools for understanding the modes of achievement of the results themselves (Ostinelli and Toscano, 1998:7).

5.6. Performance measurement and evaluation from an activity-based management accounting perspective

It has become increasingly important for organisations to develop performance measurement that reflects the growing complexity of the business environment, and that monitor the organisation's own strategic response to this complexity (Ostinello and Toscano, 1998:1).

It has therefore become increasingly necessary to improve the basis of accounting information so as to provide management with the information needed to measure performance (or lack of performance). It is necessary to spend time on performance measurement and its relationship with ABC before ABM is discussed.

Traditional performance measurements in accounting are full of factors that add to non-value-added activities. ABM is primarily concerned with reducing non-value-added activities as a way to increase throughput. ABC measures costs from a longer-run perspective than traditional costing does (Fixed costs are viewed as long-run variable costs). ABC may be used to determine the impact on overheads of reengineering company processes to streamline activities and minimise non-quality work. As quality improves, management's thresh-hold of acceptable performance becomes more demanding and performance is evaluated against increasingly more rigorous benchmarking (Barfield *et al.*, 1997:977).

Performance measurements should concentrate on that which is of value to the customer. Measures can be qualitative, non-financial or financial. Selection of the measurements should definitely be related to the performance that management wants to either encourage or discourage (Barfield *et al.*, 1997:978).

Performance measurement is an indicator of results achieved by an activity. Performance measures reflect the output of the process. The performance of one activity often becomes the cost driver for another activity. The receiving activity's performance is dependent on the supplying activity's output. Performance measures therefore become cost drivers (Burk and Webster, 1994:12).

Performance measurement systems represent an important tool for setting up organisation control mechanisms – they ensure that a company or organisation develops types of strategic and operational behaviour aimed at achieving those wide-range and long-term objectives which include satisfying all the interests that revolve around the company (shareholders, employees, customers, suppliers, public institutions etc.) (Ostinelli and Toscano, 1998:2).

Performance measurement systems are key factors in assuring the efficient implementation of company strategy. This becomes very clear when the purpose assigned to them are considered. These purposes may be summarised and explained as follows:

The system must measure and facilitate the evaluation of performance achieved.

Performance measurement systems must highlight the way all organisational units move towards achieving the company's goals. Performance indicators must constitute the vital signals of an organisation. The level of efficiency with which the operation activities are carried out in relation to the achievement of the specific objectives of the company must be quantified.

The system of performance measurement must enable individual operational behaviours to be directed towards the achievement of company strategy.

Performance appraisal must ensure that the behaviour of a single operator or groups within the company is coherent (in line) with the global objectives of the organisation.

The performance measurement system must contribute to the learning process of individuals and of the organisation as a whole.

The comparison between results obtained, objectives set and actions planned to achieve them can be an effective learning tool.

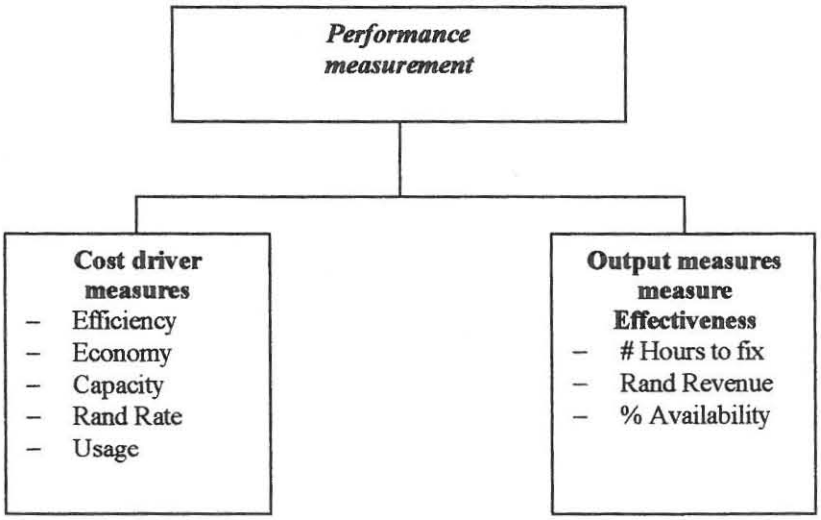
Ostinelli and Toscano (1998:3) concludes that a system of performance measurement must appear as a direct derivation of strategic company objectives and it must be linked to the organisational strategy and must make it possible to check the realisation of plans directed towards the attainment of company objectives.

Walker (1999:19) warns that ABM(A) systems should not be entered into lightly, but if, however, there is to be an ABM(A) system, it is necessary to incorporate non-financial measures. Cost efficiency is analysed by examining cost drivers to see if the costs are excessive (for example, wrong resource allocation, over-

capacity, usage or rates being too high). Performance effectiveness involves examining output measures to investigate if the cost object is being delivered effectively. Hereby ensuring that the organisation's objective is achieved and maintained.

Performance measurement

(Walker, 1999:20 Adapted)



Ostinelli and Toscano (1998:1) maintain that in the search for costs and value drivers for customer satisfaction, the performance evaluation system changes from company to company. A comprehensive system of financial and non-financial indicators should be developed to analyse the effects on quality, time, revenues and costs caused by management decisions concerning, among others, the following:

- The market and customer needs (company strategy),
- The products and service attributes and range,
- The business activities performed to design, plan, manufacture and sell products and services,
- The human and technological resources and capabilities involved in the business activities, and
- The relationship among departments along the main business process.

Implementing ABM involves determining service level agreements (SLAs) for the cost drivers and earned value rates (EVRs) for the cost object or their attributes. The discipline of negotiating the dollar value on their organisation's performance focuses management's attention on the effects of key decisions. Service level agreements should be benchmarked against external providers and earned value rates against other similar organisations (Walker, 1999:20).

It is of fundamental importance in order to plan and develop a performance measurement system that key variables be identified. It is logical that the choice of what to measure and how to measure performance be in line with the organisation's objectives. When an organisation formulates its strategy and takes the necessary decisions to carry it out, it must analyse the forces that act within the relevant competitive arena and identify critical variables for success in that environment. The strategies and corresponding objectives should be correlated to these critical success factors (Ostinelli and Toscano, 1998:5).

Ostinelli and Toscano (1998:5) explain critical success factors as the limited number of areas (internal variables within the organisation and / or external market variables) whose results, if possible, ensure a positive competitive output. These critical success factors may include, among others, the following:

The inability to personalise the product

The respect of qualitative specifications and functionality of the product are enough to shift focus of competition from price (as in the past) to a high qualitative profile.

Efficiency in manufacturing

This is especially true for low technology products or where the relationship with customers is limited to the supply of goods only (for example, corrugated piping). Controlled raw material and manufacturing costs keep the selling price down and could be a strategically important variable in such a case.

Prompt delivery

Particularly for highly personalised products, this is a key factor. In certain circumstances the actual speed of delivery is not so important, since the customers are able to fix schedules in advance and are not liable to change at short notice. On the other hand, the respect of these schedules is vitally important.

The ability to innovate / create a service or product

It is very important that an organisation develops the capacity to make proposals in solving customer problems and come up with alternatives and new ideas. It is thus necessary to have a wide range of possible solutions to solve customer problems immediately.

In conclusion, an organisation's performance measurement system must be able to focus the attention of all the operating levels within the critical areas of operation, or more specifically, on critical activities. This means that a system must be able to highlight the levers that each organisational unit can manoeuvre to have an effect on specific results.

The ability of the performance measurement system to improve the organisation's capacity to control the critical success factors derives from the degree to which the system itself manages to link the different activities carried out at different organisational levels towards the achievement of the same objective. The choice of the objects (what is measured) and the measurement system (how to measure) is fundamental in this sense. This is the ultimate challenge put to ABMA.

5.6.1. Role of management accounting in performance improvement

The management accountant can be forgiven for seeing ABCM as a one-off cost reduction initiative. Where involvement in implementing this strategy is foregone for safer options by the accountant, May (1998:1) maintains that cross-functional teams have conducted cost and management exercises where non-accountants are chosen as team leaders. Some organisations went as far as installing sophisticated activity-based management accounting systems and functions outside the finance and management accounting functions, thereby removing them from the role of information-provider in the future.

It is no longer sufficient to regard ABC and ABM as a small head-office function, which carries out analysis and disperses it to all levels of interested parties within the organisation. ABC and ABM must be recognised as an integral - a multi-user system - with detailed models owned and run by each business unit performance manager (the management accountant), consolidating to higher-level macro models for corporate use. This advanced ABC and ABM as an all encompassing system, must be able to interface easily with, or be part of, the main organisational system (May, 1998:2).

May (1995a:1) stresses that it is time for reluctant members to bury arguments of tautology and to accept the now overwhelming empirical evidence that ABMA is proven to work. It has been developed into an all-encompassing philosophy that complements modern organisational structures and systems and embraces the need for continuous improvement to achieve optimum business effectiveness and efficiency – an all too important feature of the competitive times of the 1990's to ignore.

Management accountants must move past criticism of the previous years. Accounting systems developed by accountants have contributed to two decades of stagnant productivity and shrinking economic opportunities. In the top-down control cycle attention was focused, not on fulfilling customer expectations – but on achieving accounting-based targets by manipulating processes. In contrast, the new bottom-up empowerment cycle, ownership of information allows customers to choose amongst global opportunities. This requires organisations to be responsive (listen) and be flexible (change quickly) by empowering the workforce to learn and make changes that continuously improve processes capable of satisfying customers (May, 1995a:2).

ABMA demands participation from all members within the organisation. It assists all interested and affected members of an organisation to understand what resources are consumed and outputs produced by each activity and process within the organisation. This ultimately enables better decision-making. This ensures that the people responsible for performing the activities that are involved in setting realistic budget and performance measures – non-financial as well as financial, qualitative as well as quantitative – in line with overall organisational objectives. Ownership of this information must remain with activity and

process managers but still needs to be controlled and produced by management accountants (May, 1995a:2).

The role of a modern management accountant in any organisation entering the new millennium is that of 'facilitator' of information. The management accountant must understand and communicate well with the people, discerning their different needs, values and beliefs. "Does your management accounting system support empowerment?" is the question that May (1995b:1) asks. A top-down culture of empowerment has for decades stifled innovations and ideas by:

- Viewing any ideas from below with suspicion just because they are new,
- Insisting that staff must go through several layers of management to gain approval before they can act,
- Discouraging the identification of problems by regarding them as a sign of failure,
- Ensuring that information flows upward only.

May (1995a:1) continues that with the advent of world recession and wide spread privatisation, many organisations have recognised that they must change their bottom-up empowerment culture in order to survive. Many organisations have embraced TQM and empowered their workforce to make decisions to improve global organisational effectiveness. This culture change is in nature an evolutionary process and the management accountant's role is vital to its success.

Two key elements are essential for a successful bottom-up empowerment culture. May (1995b:2) suggests that i) the establishment of mutual trust and respect between the workforce and management, and ii) the provision of relevant information to the newly empowered workforce to enable them to use their newly found decision-making powers with confidence to ensure their success and the success of the organisation as a whole.

The extent to which mutual trust is obtained and achieved will depend on the history and existing organisational culture present. Mutual trust is not always easy to obtain and careful management is required in this regard. This new era of empowerment challenges the management accountant to not only change its habits, but also in playing a leading role in managing change within an organisation (May, 1995b:2).

Ostinelli and Toscano (1998:3) have reviewed recent literature and believe that a critical step for the effectiveness of a performance measurement system is the clear understanding of the relationship among products, customers and departments. The quality, time and cost evaluation for products / services, customers, and departments are to be viewed in an integrated manner in relation to the complexity of the product / service, customer and department created on the organisations activities. According to this approach, the real cause of costs and value in organisations are investigated in respect to activities and processes performed in relation to the organisation's own strategy.

In conclusion, the role of management accountants as the leaders of BPR and ABCM in performance improvement initiatives, contributes significantly in building trust and breaking down functional barriers. Management accountants act as a catalyst, researching and providing analysis, assessing improvement proposals, facilitating workshops, improving communication by bringing together service providers with service receivers (internal customers and suppliers) in order to affect improvement.

5.7. Activity-based management accounting - tool

ABMA is a methodology used to identify and measure the cost and performance of an organisation's business processes accurately. This methodology can thus assist in the evaluation of a BPR project, as the reduction of costs is an important factor in the reengineering process. In the new business environment value – as defined by an institution's customer – is composed of four variables. Dougherty *et al.* (1994:6) describes them as follows:

Value = Increased Quality * Increased Customer Satisfaction /

Reduced Time * Reduced Costs

It is therefore clear that an ABMA system provide the user with insights into the cost and performance of activities. This information can be used to focus on improving or redesigning efforts on high impact activities as identified by the ABCM system, namely doing an activity analysis to identify improvement opportunities and then to develop and analyse a model of how the process should be functioning in future. Cost information is essential for effective strategic management. Effective cost management involves continuous aligning expenses with the strategic goals and operational needs.

Burk and Webster (1994:94) reflect the specific tools and analysis techniques to obtain the most from ABMA during the course of a BPR project that assists in designing new processes. These tools and analysis techniques are summarised as follows:

Analysis tool	**ABMA**	**How tool supports BPR efforts**
Benchmarking – measuring performance of activities against performance of similar activities in internal and external organisations.	• Factors that drive costs • Financial and non-financial performance information	• Determines areas of low performance • Sets improvement goals
Best practices analysis – involves learning how industry leaders perform activities that have similar purposes to their activities.	• Factors that drive costs • Activities currently performed	• Provides a better understanding of how a business performs in comparison to industry leaders • Enables management to evaluate (through comparison with the 'best of breed') whether the focus of activities is consistent with the purpose of performing them.
Value-added analysis – defines the purpose and contribution of activities value-added = contributes to satisfying customer requirements.	• Financial and non-financial performance information • Factors that drive costs	• Develops understanding of why activities are performed and the value added by the activities contribute to the product • Helps evaluate effectiveness and efficiency of activities.
Pareto analysis – is based on the '80/20 rule' that assumes that 20% of what is done accounts for 80% of the business.	• Cost of activities	• Identifies high-cost activities by ranking activities in decreasing order of cost.

Paradigm analysis – establishes or defines boundaries and tells how to behave inside the boundaries in order to be successful.	• Factors that drive costs • Financial and non-financial performance information • Activity models	• Provides a better understanding of current practices and related performance forming the foundation for questioning the current constraints of a process • Helps management view a process with the objectivity of an outsider, thereby helping generate new and innovative ideas for improvement.

The main aim with BPR is the total re-invention of the processes within an organisation once it is identified that the current system operating within the organisation fails to meet the needs and objectives of that organisation. BPR leads to the radical transformation of an organisation to ensure that the organisation is strategically in place to focus and act on competitive factors and that it will deliver improved products and services measured in terms of cost, quality, customer satisfaction and shareholder value. ABMA can therefore become quite a helpful tool for BPR exercises.

This however does not mean that a person should stop at a once off BPR exercise. This tool can be used in a continuous improvement process to include Kaizen costing. {Kaizen costing is the term used by the Japanese for continuous improvement}. Continuous improvement in any organisation includes improvement in quality, efficiency, cost assignment, cost allocation, cost management and pricing. Kaizen costing is a cost reduction technique developed by the Japanese with the aim of reducing costs mainly in manufacturing organisations. Kaizen costing strives to give the employees the responsibility to improve processes and reduce costs. Continual cost reduction and increased efficiency is seen as Kaizen costing's most important goal (Visser, 1999:6).

5.8. Summary

It becomes clear that ABMA could almost be a synonym for ABM. The only tail that could be added is the fact that ABMA provides the availability and the need for information that must be available for

management purposes. This information is not restricted to financial indicators but includes non-financial indicators.

Continuous performance improvement can also be best achieved by an all-encompassing advanced planning, monitoring and control system that embraces the new empowerment philosophies. ABMA is such a tool that has evolved over the last few years to such an extent that management can make maximum use of this system to achieve the organisation's objectives.

Using ABMA, the management accountant can help all interested parties to understand what resources are consumed and outputs are achieved by each activity and process within the organisation thereby assisting in management's objectives of planning, control and decision-making functions. ABMA can also assist management to determine how satisfied and happy clients and customers are about the product or services delivered by the organisations involved. Product or service quality, innovative techniques, efficient processes and financial performances are all factors that will contribute towards management's interpretation of customer satisfaction.

Ownership of information also empowers the workforce to learn and make changes that continuously improve activities and processes by removing constraints. As information provider within the organisation, the new age management accountant facilitates this process. Assisting not only in the assessment of ideals for improvement but also the sensing and monitoring of activity and process budgets, performance measures and best practice targets, non-financial as well as financial, quantitative as well as qualitative, short term as well as long term – in line with the organisation's overall objectives.

In the end all this information translates to management's need for: technology, information and the alignment of people. Without these critical elements all other techniques and processes employed by an organisation to 'seem' effective and efficient will be useless. The information generated by whichever system employed must be available, accurate, timeous and useable to management.

6. Management accounting in the private hospital groups in South Africa

In this chapter specific mention is made of the current situation in the private hospital sector. The field of study is, once again highlighted. The private hospital groups and their portfolios are also sketched and presented here.

6.1. Introduction

As mentioned in paragraph 2.5. page 35, the cost classification that is used in manufacturing concerns, namely that of direct material, direct labour and manufacturing overhead costs, is not appropriate for a service providing concern. Glautier and Underdown (1997:415) describe service industries as delivering of a service, therefore the cost classification of 'direct' and 'indirect' is more appropriate. The composition of these costs are significantly different to those of a manufacturing concern, especially due to the fact that labour comprises a much greater portion of the cost.

6.2. Situation analysis - hospital costing

6.2.1. History of hospital costing

Leyenaar (1997:13) describes the health care sector as being flooded by increasing patient loads, more complex procedures, and the ever-rising medical costs, having the cost of hospitalisation to be the predominant cost factor absorbing most of the resources. Management of the process between funders, providers and patients, is becoming increasingly difficult – becoming the greatest challenge facing the newly formed health management organisations.

In 1995 Brown (1995:103) agreed that tremendous pressure was being placed on health care providers from employees and employers reacting to the ever-increasing cost of health care – increases that were well above the increase in the normal cost-of-living-index.

Ramsey (1994:385) concluded that the proposed reform in the health care sector left the whole sector in turmoil. The outcome of the various debates, although uncertain, seemed to steer the industry into a managed care and integrated delivery system direction. Both of these trends signalled a change in the traditional role played by hospitals in the health care industry.

Leyenaar (1997:13) maintained that hospital systems, particularly those in the government sector were unable to provide management with timeous and meaningful information. These government sector hospitals were rarely able to generate on-going information resulting in the managers' inability to make appropriate decisions without this type of information at their disposal.

Private sector hospitals, on the other hand, had sophisticated systems that ensured that all items directly used were properly costed and charged for. Unfortunately this cost-focused approach was a recipe for over-servicing where patients had little or no influence over those charges and ended up being forced to pay higher medical premiums (Leyenaar, 1997:13).

In 1997, Van der Merwe (1997:16) believed that the private health care system formed an integrated and essential part of South Africa's health care delivery system. Over the past few years, a strong and consistent influx of patients was witnessed from the public to the private sector. Van der Merwe (1997:16) doubted whether this influx would be reversed without a massive injection of funds into the public sector, which unfortunately neither the government nor the taxpayer could afford.

Van der Merwe (1997:16) emphasised that, in South Africa, the health care delivery system was clearly demarcated into the public and private health care systems. With nurses being the exception, the majority of health care workers were found in the private sector. In the 1970's and 1980's the government strongly encouraged the privatisation of the health care industry. This resulted in the growth in the private health sector, with specific growth in the private hospital industry. During this time, government expenditure on health care did not keep up with demand, causing a decline in the quality of service in the public sector and the rush of both staff and patients to the private sector.

Hospital management needed to become more business orientated, with a system that provides both cost effective and meaningful information. Outputs need to be prepared in a timely manner in order to be more useful and practical for day-to-day management. Optimisation of resources without negatively impacting

on the health care delivery capabilities of the hospital and its staff should be the focus of management's attention (Leyenaar, 1997:13).

Improved management information and systems would enable better decision-making that in turn should enhance health care delivery. In order for this to happen, the cost of various activities, procedures, departments and services needed to be known by the people responsible for the decisions at root level (Leyenaar, 1997:13).

Brown (1995:103) maintained that the design of medical scheme products, that included affordable medical aid membership fees and acceptable health care benefit packages, introduced conflict between the interested parties. One solution for this conflict for medical scheme fund managers would be to introduce cost containment techniques, similar to those found in managed care programmes.

To meet the challenges faced by managed care and integrated delivery systems, hospitals needed to develop stringent control over all its operations. Its ability to provide low-cost, high-quality care for a large number of patients was essential to its long-term viability. One weapon in this struggle for operational control is the hospitals' cost accounting system (Ramsey, 1994:385).

Brown (1997:103) believed that managed care techniques of cost containment could influence the business operation of a private hospital in the following ways:

- Transfer of risk from the funder to the provider using alternate fee structures (i.e. fixed fees and capitation fees {Latin: per head}),

- Utilisation review calls for pre-admission controls, patient length of stay controls, concurrent patient treatment reviews and treatment protocol,

- Cost analysis according to current tariff structure by procedure or diagnostic grouping by funders to be used as a basis for treatment protocol and fee negotiations,

- Data collection and statistical reporting will be more demanding because coding structures for diagnostic groupings and procedures will be introduced by the various funders and authorities,

- Quality control will be introduced by professional associations and funders to ensure that quality of patient care is maintained despite cost containment measures that are introduced.

A possible solution to improve performance was to have a well thought out, structured approach to generating comprehensive, timeous management information. Creating this type of reporting outputs would be determined in a consultative and participating manner. Of noticeable importance will be that clinicians and management will need to work together closely, form the start of such an envisaged project (Leyenaar, 1997:13).

Such an envisaged project or process would be built around an agreed structure for the hospital where all resources used or consumed must be accounted for in a matrix format and matched against revenues generated. Leyenaar (1997:13) suggested that the end would be a Profit Centre Approach with related activities, services and procedures matched to the resources needed to perform them. An important ingredient to what could be called a strategic cost management system would be to extract and identify the major processes within the hospital as well as the cost drivers. By creating a closer link between strategic and operational objectives – a clearer and fuller understanding of costs would be gained.

Van der Merwe (1997:19) believed that private hospitals could be mistaken for 'shopping malls' where a number of entities rent out space from the hospital, but must submit their own individual accounts to the patients and their medical schemes. Examples include pathology, radiology, and blood-transfusion services as well as cash services such as cafeterias, florists, gift shops and others.

Doctors also often are self-employed in the private industry. They use private hospital facilities to admit patients and usually rent consulting rooms at these hospitals. These doctors, in turn, send their individual accounts directly to patients and medical schemes. The cost of medical treatment (by doctors) is seldom reflected on hospital accounts. The professional medical association, MASA, publishes a guide to their fees (doctors) and RAMS publishes a similar guide for their respective members.

Private hospitals follow certain routes for charging patients for services rendered. Brown (1997:131) sets out the most notable fees as follows:

Fixed fee

Fixed fee is a payment method used to compensate hospitals for a definite service or services provided. The hospital agrees to receive a fixed amount according to specific payment categories. These payment categories include the following:

- Diagnostic related groups (DRG's) or procedure: These are fixed fees for treating a particular diagnosis made on a patient.

- Per diem: A composite fee, that includes all activities, medicines and materials for a patient stay based on a per-day of stay.

- Per case: A composite fee that includes all the activities, medicines and materials for a patient stay based on a rate per admission irrespective of length of stay.

Fee-for-service

Medical schemes pay for ward stay and theatre procedures on a time basis. Under this fixed fee the number of patient days and theatre time are agreed upon beforehand and the hospital is paid regardless of how long the operation took or how long the patient stayed in the hospital.

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Capitation fees (Latin: per head)

These are normally determined on the basis of a contracted population to be served by the hospital. The contract may be with government for primary care services or with a medical scheme for more comprehensive coverage.

At the end of the day it all boils down to costs. To cater for all these needs, a hospital's accounting system should serve three important purposes. Ramsey (1994:374) summarises these purposes as follows:

- Firstly, a proper designed cost accounting system must promote cost efficiency within a hospital without sacrificing the hospital's product and service quality,

- Secondly, a hospital's cost accounting system must allow the hospital to maximise its resources through product and service line management,

- Lastly, the current hospital cost accounting system must highlight opportunities for continuous improvement of hospital operations.

Van der Merwe (1995a:57) claimed that a lack of equity was the biggest challenge facing the health care delivery systems in South Africa. The discrimination basis had turned from race to income related issues. Some of the more obvious limitations based on income included:

- Lack of access to health care in the lower income groups,
- Lack of equity in health care delivery,
- Wastage,
- Ineffective cost control measures, and
- Ever-increasing costs in all health care sectors.

Van der Merwe (1995a:58) also maintains that traditional health care funding systems exhibit the following problems:

- Uncontrolled escalation of medical aid contributions,
- Erosion of medical scheme benefits,
- Medical insurance industry growth,
- Uncontrolled increase in the cost of treatments,
- A growing number of membership followed by gross under-funding, and
- An unrealistic demand by medical scheme members resulting in a growing demand for health care.

As early as 1995 Brown (1995:103) believed that the present computer information systems used by most private hospitals had been specifically designed to achieve the following objectives:

- To provide a complete and efficient patient administration system with a record keeping system that meets the medical and legal requirements of the specific practitioner and authority involved,

- To prepare the patient's bill so that it complies with the RAMS tariff system of coding, as well as providing the patient with the bill in order to recover amounts due from the patient as soon as possible,

- To maintain and run an integrated pharmaceutical programme that enables the hospital to record a single transaction, not only to update the pharmacy stock management records, but to bill the appropriate patient account,

- The analysis of incomes generated by referring medical practitioners with the aim of optimising and managing bed and theatre usage to the maximum,

- To have a general ledger in place that provides financial information based on cost centres with the aim of facilitating effective management of these various cost centres.

Van der Merwe (1995b:111) also agrees that detailed information on cost per centre and cost per activity between different procedures enable hospitals to truly and accurately compare relative specialities and in the process enable the hospital to develop a medical doctor's profile to suit the hospital's specific needs.

The cost accounting system used by the hospital should also enable the hospital to extract accurate cost per procedure information. This will enable hospital management to offer discounts to medical schemes based on pre-packaged and pre-priced procedures. In the private hospital industry, effective marketing will be highly dependent on the availability of accurate data of this nature being readily available. Should hospitals have adequate cost structures available, hospitals will be in a position to negotiate special deals with special medical schemes. This in turn entails discount in exchange for volume (Van der Merwe, 1995 b:111).

Hospitals are in an environment where prices are fixed by institutions, for example RAMS, after consultation with organisations such as NAPH. Brown (1995:103) believes that future price setting procedures and tariff structures could involve some of the following aspects:

- Unilateral price setting by NAPH,
- Unilateral price setting by individual hospitals,
- Unilateral price setting by RAMS,
- Unilateral price setting by individual medical schemes and HMO's,
- Random price setting between individual medical schemes and HMO's,
- Negotiate pricing between NAPH and RAMS.

Having, through the above literature, gained some background information into the general working of hospitals, including private hospitals, the following section will focus on issues related to the current cost structures and techniques used in private hospitals.

6.2.2. Current situation

Due to the demanding challenges placed on healthcare organisations, financial managers play a large role in strategic and operational decision-making functions. Player (1998:66) describes strategic functions as including decisions regarding the determination of which equipment investments are justified, analysing merger opportunities, examine outsourcing opportunities, and assisting in determining appropriate sourcing strategies.

Operational duties include helping operational managers understand the financial impact of daily routine decisions, supporting process-improvement projects, identification of activities that add value by enhancing service to customers and elimination or reduction of those activities that create wastage, and providing both financial and non-financial performance indicators (Player, 1998:66).

Capettini (1998:46) agrees that one of the greatest challenges to the continued viability of hospitals is the development of accurate cost information on which the basis of strategic, pricing and management issues can be based. Better costing systems are very important to hospitals because of the nature of their cost structures.

Over the past twenty-five years rapid advances in medical technology have lead to organisations with a high percentage of fixed costs and little or no flexibility, to reduce costs when output volume decreases. Capitation agreements and prospective payment systems, in addition, has placed greater emphasis on reducing the length of stay across diagnosis categories (Capettini, 1998:46).

Capettini (1998:46) maintains that accurate cost information on individual lines of service is vital if a hospital is to know what mix of services to emphasise, where costs can be better managed, and how to successfully bid on business from insurers, managed care programs and employer groups.

Pricing forms an integral and vital part of any business, hospitals are no exception. Many private hospitals follow the RAMS tariff coding structure for billing patients. The new constitution of RAMS came into effect on 16 June 1996 with a new council of 16 democratically elected members. During 1996 the major

change in the health sector was the move towards managed health care and managing of health care – the continuum from pure managed care to managed fee for service (Brennan, 1997:153).

Brennan (1997:153) continues that RAMS is not in competition with managed care companies. Managed care is diminishing personal choice and the challenge for medical schemes is to look at both the choices involved and the costs. Managing costs can be accomplished easily, the difficult part in the formula is to manage costs and maintain high quality.

At a meeting held in 1996 under the new constitution, it was decided that tariffs should not be negotiated, but that RAMS would consult with the interested parties. The whole exercise changed medical schemes and its market for the years ahead. Previously negotiations were based on the input cost of providers and this would determine the increase in contributions. Now the employer and trade unions decide what is affordable as a contribution and an increase. In future there will be much more negotiation between individual funders, – either managed care companies or medical schemes, and providers (Brennan, 1997:154).

RAMS represented 180 medical schemes with a payout bill of R16 billion in 1996. All providers who seek more from the limited resources available are most likely to be affiliated to RAMS in one-way or another (Brennan 1997:154).

Anderson (1999:65) confirms that South Africa's fee-for-service medical aid system has, for many years, been driving medical inflation through the roof. Managed health care has had an influence on the volatile health care industry in that it has started to make an impact on lowering medical costs while at the same time increasing the quality of health care delivery.

Anderson (1999:65) quotes medical inflation in the region of 18 % and maintains that the medical aid schemes have not been able to contain medical inflation due to a lack of information with which to control

it. Medical aids are third party administrators that take in subscriptions and pay accounts based on the RAMS scale of benefits, while charging up to 10% of the subscription as administration fees.

When managed health care was introduced to South Africa, providers feared that they would become redundant. Anderson (1999:70), however, believes that for managed health care to succeed, quality must be assured, while correct utilisation of resources must be maintained, thereafter costs will start to come down. Once providers grasped the initial concept attitudes started to change.

Van den Heever (1999:163) views the private health care system as follows: *"The health care system can best be described as a system experiencing a period of structural adjustments. Although some of this can be attributed to government reforms, fundamental changes in the underlying market are of greater significance. Cost increases within the private health care market, against a backdrop of slow economic growth, have created opportunities for new market entrants. The resulting competition has increased pressure to purchase health care services in a more organised fashion, fundamentally changing key relationships between funders and service providers, as well as between service providers and supply companies."*

Van den Heever (1999:163) maintains that government's response to underlying medical cost increases and changes in regulations, has been the recently passed Medical Schemes Act. This new Act aims to limit the ability of medical schemes to discriminate against anyone based on their health status. Key features of this Medical Scheme Act can be summarised as follows:

- Open enrolment applied to open schemes, whereby no individual can be excluded from cover, subjected to specific provisions required to protect schemes from adverse selection,

- Although schemes are required to make provisions for a scale of fees, or reimbursement rates, no statutory set of fees is provided for, leaving schemes free to negotiate their own methods of payment and type of fee.

Van den Heever (1999:166) comments that increased attempts at cost control have exposed various hospital groups to more risks than in the past, especially in relation to inpatient stay and expensive treatment. In addition, pre-authorisation, accounts review and case-management have affected the revenue flow of hospitals that, in turn, create pressure to increase tariffs.

The past two years have seen conflict between HASA, {previously NAPH}, and RAMS arising from the setting of their tariffs. HASA pushed for, and were allowed, the right to set recommended prices that exceed those set by RAMS. The Competition Board supported this move, but it permitted hospitals to collude on a national basis in the setting of fees. This, however, left the individual patient in a disadvantageous position in relation to the hospital that can now monopolise prices with permission (Van den Heever, 1999:166).

Cost shifting onto individual patients through monopolistic pricing provides short-term relief to the troubles facing hospitals. Long-term patterns will be for hospitals to negotiate exact terms with individual funders. The RAMS recommended scale of benefits is still used by many medical schemes. These fees are not negotiated and their long-term viability is questionable (Van den Heever, 1999:166).

Van den Heever (1999:165) concludes that the growth potential for private hospitals is quite limited unless they, on the one hand, begin to target the lower income market, and provide affordable step-down services for the high-income market on the other hand. The moratorium placed by government on the building of new private hospitals can also negatively impact this situation. Now the scene has been set for a very different health care system to emerge over the next decade.

In 1997 the daggers were truly drawn between private hospitals and the medical schemes industry over a Competition Board investigation into allegations that RAMS was guilty of restrictive practices that were preventing the free functioning of the health care market. Bisseker (1997:1) maintained that the Competition board investigation followed complaints from HASA that RAMS was using unethical tactics to control the accreditation of new private hospitals and ration the use of medical equipment.

In this argument HASA, which at that time represented 97% of South African hospitals, argued that a number of hospitals were suffering financially because RAMS had for five years failed to increase hospital tariffs to keep up with inflation (Bisseker, 1997:1).

Bisseker (1997:1) summarised HASA's complaints to the Competition board threefold as follows:

- The first complaint centred round RAMS's refusal to guarantee direct payment to hospitals that charged more than RAMS tariff.

- The second complaint was that RAMS was refusing to award practice codes to hospitals that did not pass its private inspection, even though those hospitals had already been licensed by the state. Without a RAMS practice code a hospital cannot claim directly from medical aids.

- The last complaint lodged concerned RAMS' technical review panel that vets new medical equipment for a R500 fee. If the committee found that a device was not cost effective, RAMS recommended that its members not pay for its use, even if the health authorities already cleared the devices.

The poor relationship that has developed between RAMS and HASA is also reflected in Medi-Clinic's Annual Report (1998:7) to shareholders where the chairman states his uncertainty of the future role that RAMS has within HASA. He maintains that the poor relationship between the two groups is unfortunate and in no one's best interest. The chairman continues that with the development of managed care the overwhelming role that RAMS used to play in the past, in setting tariffs, is on the decline. The structure of the hospital tariffs is furthermore changing rapidly as risk-sharing models begin to emerge.

Capettini (1998:55) maintains that healthcare organisations often have little or no control over pricing and mix decisions. Hospitals tend to be price takers in providing Medicare services. Many providers are also required to accept a wide variety of patients. In these situations an approach to becoming more efficient

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and effective is to use an activity focus to manage activities, instead of costs, which vary for different levels of service.

Capettini (1998:58) continues that the management of the hospital needs to implement a strategy of continuous improvement in the process for the continued search for waste in operating activities, and the removal or elimination of this in all the levels of the cost hierarchy in the delivery of services. In order to effectively pursue continuous improvement programs and manage activities and the related resources consumed by these activities, management must have better cost information than was provided by traditional cost systems.

6.3. Statement of the problem

The problem facing hospitals, particularly private hospitals, is clearly set out in paragraph 1.2 page 2 and in paragraph 6.2.2. page 141. The ongoing crisis surrounding pricing and the continuous conflict with RAMS / BHF regarding the determination of tariffs are hospital management's biggest challenge yet.

As set out in the hypothesis in paragraph 1.3. page 3, and in the aims of this research in paragraph 1.4. page 3, the current costing system used by the private hospital groups will be reviewed. Attempts will, thereafter, be made to suggest improvements in the management process with regards to costing of activities and the recovery thereof. By executing this exercise, the hope is expressed that clearer and more accurate cost information (specifically about the cost of activities) can be obtained to assist private hospitals in their management processes.

6.4. Field of study - private hospital groups in South Africa

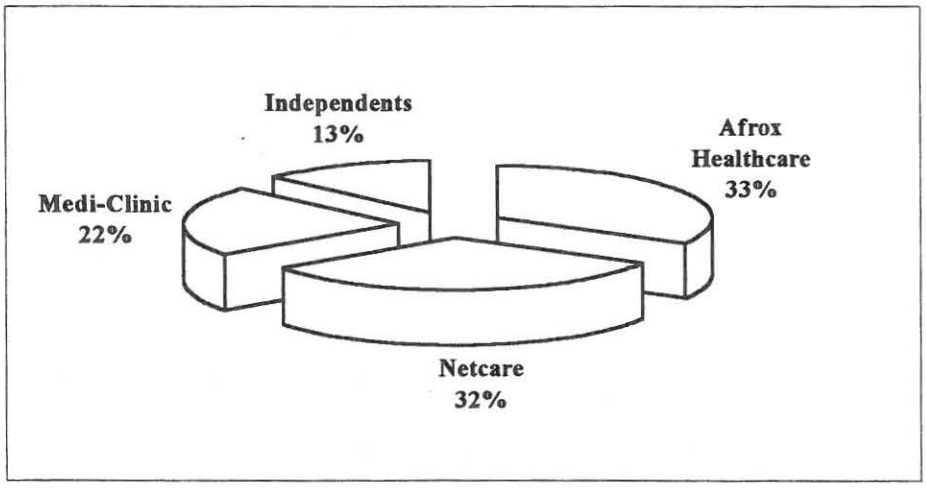
6.4.1. Group profile - background and familiarity

Shevel *et al.* (2000:31) maintain that South Africans spend almost R 60 billion a year on healthcare. This includes public, private and out-of-pocket expenditures. Hospitals owned by private sector companies offer facilities to about 9 million of South Africa's estimated 41 million people. Leaving the public sector with the task of serving about 80% of the remaining population. The balance of resources is continuing to shift in favour of the private sector.

From 1990 to 1998, the number of private hospitals increased by one-third, while the number of beds increased by 50%. Shevel *et al.* (2000:31) maintain that within the industry itself, the drive has been towards consolidation, with three groups coming to the fore: Network Healthcare Holdings (Netcare), Afrox Healthcare and Medi-Clinic Corporation. Any further consolidation among these three will leave this segment of the South African health industry perilously close to monopoly.

Market share by number of hospitals

(Shevel *et al.*, 2000:35 Adapted)



6.4.1.1. The Medi-Clinic Corporation

The Medi-Clinic Corporation was established in 1983 as a private hospital group, and in August 1996 the group was listed on the Johannesburg Stock Exchange. The hospital group currently consists of 33

hospitals, spread across the whole of Southern Africa. The head office of the Medi-Clinic private hospital group is located in Stellenbosch (Medi-Clinic Annual Report, 1998:5).

The group essentially provides private practitioners, mainly specialists, with consulting rooms, operating theatres, certain equipment and hospital beds. At the same time the patients of these doctors must always be satisfied with the nursing care, general care and the physical environment within the hospital. The purpose of the hospital group is to provide hospital services that add value to the life of patients, doctors, employees and the community.

In 1999 Abraham (1999:34) noted that although Medi-Clinic has been actively involved in the acquisition of hospitals in South Africa, it remains only the second largest hospital group in South Africa, the largest being Netcare / Clinic Holdings / Excel. The experienced and level-headed management group of Medi-Clinic has ensured that the group's operations are efficient and of a high quality.

Abraham (1999:34) continues that proof of Medi-Clinics success is evident in the group's stable earnings performance over the long term and its generally higher-than-average occupancy levels.

Virtually all the group's hospitals have been designed and equipped as multi-disciplinary units that provide as far as possible a one-stop service to doctors and patients. To ensure efficiency, operational management is decentralised with a strong regional support base. Head office functions are mainly to co-ordinate, control, and plan and provide certain specialised service. With a workforce of about 9 500 people and 5 000 bed occupancy capacity, the Medi - Clinic private hospital group is one of the biggest private hospital groups in Southern Africa (Medi - Clinic Annual Report, 1998:6).

In 1999, Medi – Clinic, owned 50% by the Rembrandt group, was one of the three main players to emerge and dominant the private healthcare sector. Jankelow (1999:2) suggests that Medi – Clinic's management intends to counter risks of spiralling medical costs by way of an alternative fee structure. This system allows for a patient to be quoted a fixed fee up-front on admission. This provides greater clarity for

patients. Despite management's assumption of additional risks, it would be rewarded with more than commensurate extra profits. This move would add to risk but would provide a more than correspondent return to shareholders.

Jankelow (1999:2) continues that Medi – Clinic owns an estimated 22% market share in private clinics, and that although management usually assumes responsibility for non-medical hospital activities such as laundry, security, coffee shops etc., it also outsources at some units.

6.4.1.2. Afrox Healthcare

Recently listed on the Johannesburg Stock Exchange and after mergers with Presmed and Lifecare, Afrox Healthcare has taken a strong position as rival alongside Netcare. Mculty (1999:2) maintains that the Afrox management believes that the merger will enhance profitability for the enlarged business, with the health care division of the group being the fastest growing activity – comprising 30% of the total group.

With the merger and listing, Afrox Healthcare should gain a higher profile among investors. Mculty (1999:2) believes that Afrox Healthcare will become a more autonomous and self-funding operation with greater opportunity for future unbundling.

Shevel *et al.* (2000:32) are however dubious about Afrox's future. With the proposed takeover of BOC Group plc, the controlling shareholder in African Oxygen, by Air Liquide and Air Products, the future of Afrox Healthcare is somewhat blurred. Neither of these shareholders have the exposure or knowledge of the healthcare industry and are expected to divest themselves of their stake in Afrox Healthcare. The most likely scenario would be for Afrox Healthcare to be sold to another player within the healthcare industry

Shevel *et al.* (2000:32) are however more positive towards Afrox Healthcare, believing that the merger and listing has given Afrox Healthcare the capacity to achieve a successful economy, enabling them to deliver quality care off a very competitive base. The geographic spread of the hospitals now makes their services

more accessible and attractive to funders and their members. The group's diverse interests give it a competitive edge to capitalise on opportunities. The aims for the future include becoming more involved in providing care for the emerging market of economically active but uninsured individuals.

Afrox Healthcare owns and manages 62 acute care hospitals and same day surgical centres, and has an interest in a further 11 facilities, with some 7 300 beds in total. These facilities are situated throughout Southern Africa. The group also has a number of healthcare service companies. It also provides management services to the long-term hospital care providers, Lifecare, on behalf of Afrox Healthcare that has a 55% interest in that group. Through this Afrox Healthcare has expanded its reach to the lower income bracket and is therefore now providing care to a broadened base of South Africans (Hogben, 2000:167).

6.4.1.3. Network Healthcare Holdings (Netcare)

This hospital group was formed in 1997 following the merger between Netcare and Clinics Holdings. Expansion continued thereafter with the acquisition of a number of independent hospitals and the acquisition of the listed Excel hospital group (Abraham, 1999:29).

Abraham (1999:29) maintains that although the management team has a limited track record, their skill and commitment are evident in the progress made within the group with regard to cost-cutting and restructuring programmes.

Shevel *et al.* (2000:32) point out that this is one of the largest private hospital groups in the country, in terms of the number of beds. The management team is dynamic, with strong entrepreneurial abilities and is constantly seeking business opportunities in order to strengthen its position in the healthcare industry.

While the acquisition of Clinics Holding has given Netcare the critical mass it wanted and needed, now making Netcare a dominant player in the market, Shevel *et al.* (2000:33) believe that the clash of corporate culture has raised concerns over a possible defection of doctors and specialists from Netcare facilities.

Shevel *et al.* (2000:32) maintain that over the medium term, the group is looking to reduce its reliance on the South African private hospital industry. Netcare is in the process of developing and implementing several other health care initiatives. The hope is that the diversification will allow Netcare to spread the sources of earnings and reduce the sole dependency on the South African hospital division.

Shevel *et al.* (2000:32) continue that Netcare has conducted an aggressive strategic expansion programme over the past 24 months that include substantial acquisitions. The strategy includes the expansion into fully integrated health care organisations with hospitals not only in South Africa, but also overseas.

6.4.1.4. Independents

Shevel *et al.* (2000:32) believe that there is increasing pressure on independent hospital operations to list on the Johannesburg Stock Exchange, as medical practitioners will soon be banned from owning unlisted or minority shares in a single hospital. Although the only alternative for these independents would be for them to sell out to one of the major listed groups, the real independents have accounted for minimal dropouts from the network over the past four years.

Not all the independent hospitals want to form part of a major group, regardless of the economies of scale and leverage capabilities these major groups can offer. These stand-alone hospitals survive, even thrive, because of their geographical position being favourable, their community orientated focus and the strong support they enjoy from the doctor shareholders (Shevel *et al.* 2000:32)

Some of these independents enjoy regional dominance, such as the tightly focused Curamed in Pretoria and Amahosp in the Durban area. Black empowerment group, Clinix, established in 1994, is one of the independent niche players and has three hospitals owned in partnership with the Industrial Development Corporation, Bonnitas Medical Scheme, their doctors and members of the general public. Their aim is to bring quality hospital care to previously disadvantaged areas (Shevel *et al.* 2000: 35).

Shevel *et al.* (2000:35) continue that in the past people depended on the public sector hospitals and did not have access to private facilities, therefore Clinix decided to focus on this niche. These hospitals are located in townships to make them easily accessible to the community.

Many independent hospitals are marginal businesses and contribute little to the bottom line of the larger groups. Doctors in these smaller groups are content with their present situation, thus giving them shares and a comfortable working environment, making them "*a different breed of doctor and hospital*"

6.5. Research Strategy

After having sketched the theoretical section of cost accounting and activity-based techniques from chapter 2 to 5 (page 8 – 133), and after detailing the current situation in the health care industry in paragraph 6.2.2. page 141, the empirical section of this study will now be summarised.

With the assistance of HASA, all the private hospital groups within South Africa were identified. These groups identified were as follows:

- Medi-Clinic Corporation
- Afrox Healthcare
- Network Healthcare Holdings (Netcare)
- Clinix
- Amahosp
- Curamed
- Melesela Health group
- Melomed Hospital Holdings
- Joint Medical Holdings
- Kapono Health group

To ensure the anonymity of the private hospital groups, no relation exists between the order of the hospital groups (as listed above) and the group numbers as used in the analysis of the questionnaire (annexure C page 233 – 242). The private hospital groups are numbered randomly from group 1 to group 6.

The questionnaire (annexure C page 233 – 242) was sent out to all the private hospital groups in South Africa. The aim of the questionnaire was threefold: firstly to establish background information on the hospital group, secondly to identify the cost structures currently used in the various hospital groups, and finally to assess the management style used by the hospital groups.

Before the final questionnaire was sent out to the private hospital groups, three trial runs were executed. Any questions and uncertainties were addressed and the final necessary adjustments were made. To ensure that the hospital groups completed the questionnaire, each of the hospital groups were contacted telephonically. Upon agreement being reached with the hospital group representative, the questionnaire was sent to the private hospital groups via e-mail.

After the closing date stated on the questionnaire (annexure C page 233 – 242), several questionnaires were still outstanding. Contact was made with those private hospital group representatives, and after several attempts, some of the outstanding questionnaires were obtained. From the original 10 questionnaires sent out to the private hospital groups, only six completed questionnaires were received.

6.6. Summary

From the path traced from its history to the current situation, it is clear that the industry has experienced turbulent times with regards to its costing and tariff coding structures. Increased attempts at cost control have exposed hospital groups to more risk than in the past, especially in relation to inpatient stay and expensive treatments.

In the past, negotiations on hospital tariffs between HASA, and BHF, {previously RAMS}, which represented the funders have been heated and protracted. BHF seems to have won each of these rounds, but if hospitals can break the logjam they could introduce hefty increases, especially where they have a loyal body of specialists feeding patients into their facilities. The reason for this is simple: the demand for hospital care in the existing market is such that the doctor has a major influence on what happens, and most patients agree to hospitalisation in the facility their referring specialist uses.

There are 10 private hospital groups in South Africa. Three groups dominate the private health care industry in South Africa. These three hospital groups make up 87 % of the private health care industry (paragraph 6.4.1. page 147). Questionnaires were sent to all the hospital groups. While only 6 of the hospital groups returned their completed questionnaires, those hospital groups who did not return their questionnaires, comprise a small group of hospitals that are defined as 'Independents' (paragraph 6.4.1.4. page 152).

The hospital groups that completed and returned the questionnaires represent the majority of the population (that use private health care). The returned questionnaires together make up more than 87 % of the private health care sector (paragraph 6.4.1. page 147).

7. Analysis of the questionnaire

The questionnaire, which was sent out to the private hospital groups, is analysed in this chapter. The responses as captured by the answering of the questionnaires will be outlined here.

7.1. Introduction

In accordance with the research methodology specific for the empirical research conducted in this research (paragraph 1.6.2. page 5), the 6 completed questionnaires returned by the private hospital groups were analysed. Only responses to the questions and responses to follow-up questions, as set out in the questionnaire (annexure C page 233 – 243), are presented in this chapter.

The questionnaire (annexure C page 233 – 242) was divided into three sections: section A, section B and section C. Section A asked questions relevant to the general background of each private hospital group. In section B, the private hospital groups were asked questions pertaining to the costing system used by their group, while section C was concerned with the management of each private hospital group, section C subdivided into three sections; a) planning, b) control, and c) decision-making. The questions were formulated in such a manner so as to justify the statement of the problem (paragraph 1.2. page 2) and in accordance with the aims of the study (paragraph 1.4. page 3).

7.2. Analysis of the questionnaire

7.2.1. Section A : General background

In fulfilment of the main objective of this study, (paragraph 1.4. page 3), questions relating to the general background of the private hospital groups were asked. This was done in order to gain familiarity with the size and structure of each of the private hospital groups. For the purpose of this study, the number of hospitals within each hospital group will be used to indicate the size of the hospital group.

Size of hospital groups

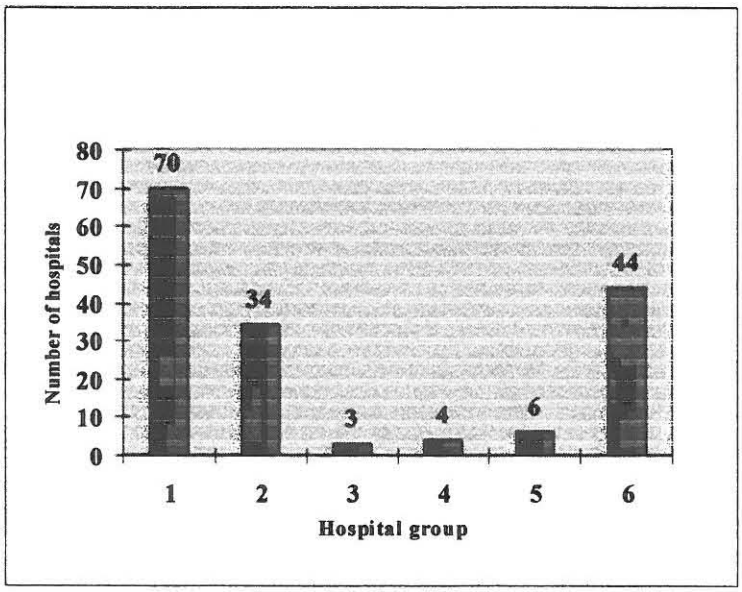
1. In response to question 1, (annexure C page 233), regarding the number of hospitals within the various hospital groups, Figure 1 below, captured the responses. The six private hospital groups that partook in this study, together make up 161 individual private hospitals in South Africa.

Having obtained the number of hospitals within each group, it was possible to determine the largest and smallest hospital groups. In order from largest to smallest with regards to hospital group size, the following:

Group 1 -	70 / 161	=	43.47 %,
Group 6 -	44 / 161	=	27.35 %,
Group 2 -	34 / 161	=	21.11 %,
Group 5 -	6 / 161	=	3.73 %.
Group 4 -	4 / 161	=	2.48 %,
Group 3 -	3 / 161	=	1.86 %,

Number of hospitals within the various private hospital groups

Figure 1

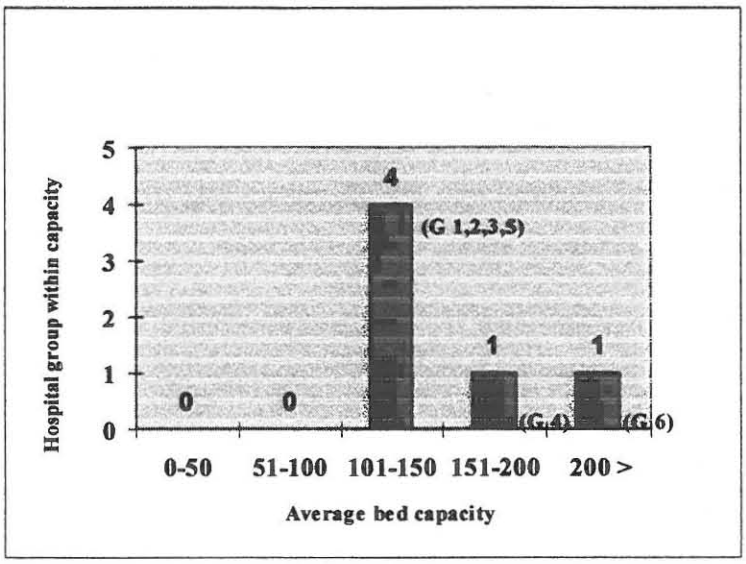


Bed capacity of hospital groups

2. In question 2 (annexure C page 233) the average bed capacity of the private hospital groups was measured. The average bed capacity rate, as indicated by Figure 2 below, indicates that 66.67 % of the private hospital groups, enjoy an average capacity of 101 – 150 beds. The remaining 33.33 % indicating a slightly higher bed capacity of 151 – 200 beds, while 1 group enjoys the highest bed capacity of 200 and more beds available.

Average bed capacity of the hospitals within the private hospital groups

Figure 2



Average bed occupancy rate

3. In question 3 (annexure C page 233), the average bed occupancy rate of each of the private hospital groups was required. A correlation may be drawn between question 1 (annexure C page 233), Figure 1 page 157 and question 3 (annexure C page 233), Figure 3 page 159. Group 1 (largest group - 43.47 %), and Group 2 (third largest group - 21.11 %), the bigger hospital groups in terms of size also enjoy the highest average bed occupancy rate.

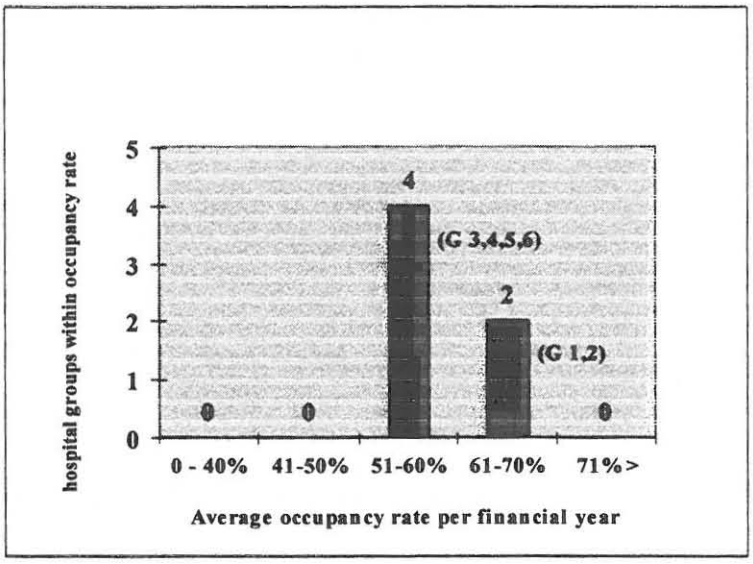
Group 6 (second largest group - 27.35 %) indicated that the hospital group's occupancy rate is 59 % which borders on an above average occupancy rate per financial year. The remaining 3 groups (together make up the three smaller groups - 8.07 %) evidence an average occupancy rate of between 51 and 60 %.

Figure 3 below, indicates that the bigger hospital groups also have a favourable average bed occupancy rate per financial year. An important factor that must be remembered is that the bigger hospitals with their greater capacities run the risk of depleting hospital resources if it has a high rate of unoccupied beds per financial year. Fortunately both Group 1 and 2 (Figure 3 page 159), indicate a fairly high (higher than average) occupancy rate per financial year.

This high rate will ensure that the hospitals resources are also employed effectively and efficiently. The remaining hospital groups reflect an average occupancy rate, which when compared with their respective sizes, reflects favourably on the individual hospital's resources.

Average bed occupancy rate for the private hospital groups

Figure 3



7.2.2. Section B: Costing

In fulfilment of the main objective of this study, (paragraph 1.4. page 3), questions relating to the current costing system used by the private hospital groups were asked. This was done in order to gain familiarity with the current costing systems used by the private hospital groups.

In order to fulfil the secondary objective of this study (paragraph 1.4. page 3), questions are asked that pertain to the method used to calculate the cost of services. ABC as an improved costing technique is introduced and questions are asked to whether activity-based techniques were ever used to cost services.

Costing system

4. In question 4 (annexure C page 234) the costing systems used by the hospital groups was addressed. Figure 4 page 161, indicates that 50 % of the hospital groups did not use any of the mentioned costing systems. Included in the 50 % are the two largest hospital groups, Group 1 and 2, and the smallest hospital group Group 3. Group 4 uses process costing while Groups 5 and 6 use job costing. The response to question 4 (annexure C page 234), concerning the costing systems used by the various hospital groups is also captured in Table 1 below.

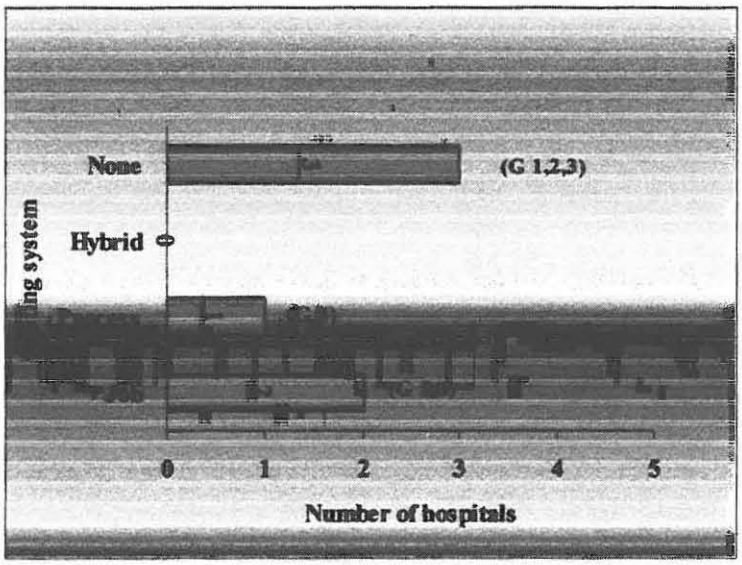
Costing systems used by the private hospital groups

Table 1

Type of costing system	Number of respondents	% Respondents
Job costing	2	33.33
Process costing	1	16.67
Hybrid costing	0	0
None of the above	3	50
	6	**100**

Costing systems used by the private hospital groups

Figure 4



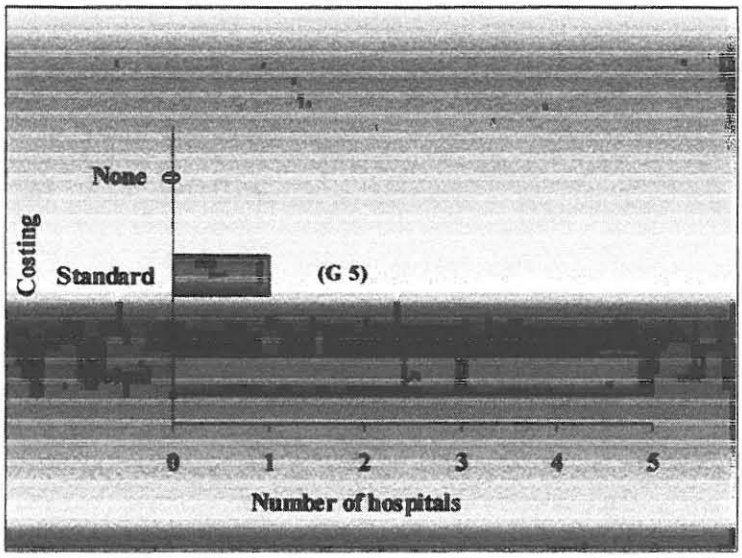
- In the follow-up to question 4 (annexure C page 234), the groups were required to state, if none of the given costing systems applied to them, which costing system was used by the groups. Group 1 indicated that costs are allocated to cost centres, while procedures were not significantly costed. Group 2 maintained that their costing system was based on actual figures, Group 3 stated that cost analysis was based on the number of admissions and by patient days. Group 6, although indicating that it uses job costing motivated its answer by maintaining that it allocates theatre time, ward days, medicine and consumables to a medical scheme benificiary whereafter bills are calculated based on the standard tariff codes.

Costing system

5. In question 5 (annexure C page 234) the costing system used by the hospital groups was required. The response was captured in Figure 5 page 162, and by Table 2 page 162. Figure 5 page 162, concludes that actual costing is the costing system favoured by 83.33 % of the hospital groups. The remaining 16.67 %, Group 5, indicated that standard costing was used.

Costing systems used by the private hospital groups

Figure 5



Costing systems used by the private hospital groups

Table 2

Type of costing system	Number of respondents	% Respondents
Actual costing	5	83.33
Standard costing	1	16.67
None of the above	0	0
	6	**100**

Overhead costing

6. In question 6 (annexure C page 234) the allocation of overhead costs according to a predetermined overhead rate was investigated. The answers were almost unanimous. Table 3 below, presents the response to overhead cost allocation. Of the 6 hospital groups, only Group 4 maintained allocation of overhead costs according to a predetermined overhead cost rate. Group 4 maintained that they used individual overhead rates for each cost centre. Table 3 below, presents that the remaining hospital groups did not use predetermined overhead cost allocation rates. Each hospital group had different reasons and explanations why they did not make use of overhead cost allocation.

Use of predetermined overhead allocation rate to allocate overhead cost items

Table 3

	Overhead cost allocation	% Respondents
Yes	1	16.67
No	5	83.33
	6	**100**

7. Question 7 (annexure C page 234) was a follow up on the previous question. The response was captured as follows: Group 1 stated that costs were allocated to the activities that controlled the costs, Group 2 simply maintained that these overhead costs were not allocated, while Group 3 stated that overhead costs were expensed in total to administration, Group 5 allocated actual overheads to actual fees for the period, while Group 6 maintained that each hospital in the group accumulated overhead expenditure against budgets and that these charges were not allocated to patient cases because billing tariffs were based on actual time or actual prices of input.

Bases for allocation

8. In question 8 (annexure C page 235) the bases used by the hospital groups to allocate their overhead costs were regarded. From the results obtained in Table 4 below, no representative method in respect of the allocation of overhead costs can be deducted. The responses vary from Group 1 and 2 indicating no bases, while Group 4 and 6 indicated that they used 7 of the possible 8 alternative bases. The only common base that can be deducted is that four out of the six groups indicated patient days / beds occupied as a basis.

Bases used by the private hospital groups for the allocation of overhead cost items

Table 4

	G 1	G 2	G 3	G 4	G 5	G 6
a) Patient days / beds occupied			X	X	X	X
b) Floor space				X		X
c) Number of personnel				X		X
d) Number of meals served				X		X
e) Number of prescriptions filled						X
f) Floor space per hospital bed				X		X
g) Floor space per ward				X		X
h) Floor space per occupied beds				X		X
i) Other						

Outsourcing

9. In response to question 9 (annexure C page 235) on outsourcing, all of the hospital groups indicated that they made use of services that were outsourced. The services that are outsourced vary from group to group. From Table 5 below, the following is clear; Group 3, the smallest of the six groups, out-sources more functions than any of the other hospital groups. Group 3 indicated 8 services that are outsourced.

Table 5 below, presents that all 6 hospital groups outsourced the laundry service, while 4 hospital groups believed that catering was a service that could be better delivered if outsourced. Three hospital groups outsource the cleaning service, while 5 hospital groups outsource the security service provided by the hospitals. This is a logical move as these are not core hospital functions. The bigger hospital groups (Groups 1, 2 and 6) do not outsource many of their services. Group 1 outsources 4 services. Group 2 and 6 outsource 2 services.

Services outsourced in the private hospital groups

Table 5

Service outsourced	G 1	G 2	G 3	G 4	G 5	G 6
Catering	Yes	Yes	Yes	Yes		
Laundry	Yes	Yes	Yes	Yes	Yes	Yes
Cleaning	Yes		Yes		Yes	
Security	Yes		Yes	Yes	Yes	Yes
Radiology			Yes			
Pathology			Yes			
Garden services			Yes			
Maintenance			Yes			

Current costing system

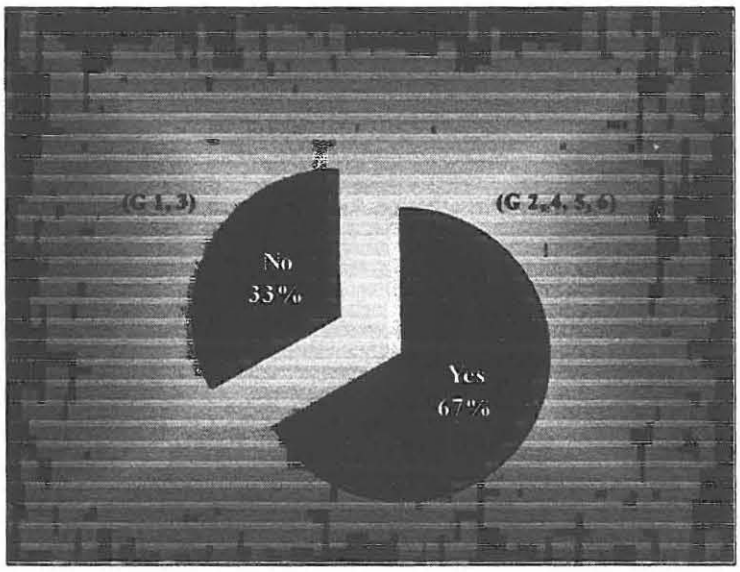
10. In question 10 (annexure C page 236), the hospital groups were asked to state whether they regarded their current costing system as providing clear, accurate and timeous costing information. **This question can be directly linked to the statement of the problem as outlined in paragraph 1.2. page 2. One of the biggest problems facing any organisation is the lack of clear and accurate information to determine the cost of their services.**

Figure 6 below, captures the responses as follows: The 33 %, who maintained that their costing system did **not** provide costing information clearly, accurately and timeously advocated several reasons for this. These reasons are as follows: Group 1 called for more accurate costing procedures to be implemented, while Group 3 maintained that cost centre accounting and a general costing system still needed to be introduced and implemented.

From Figure 6 below, the following: amongst the 67 %, that claimed that their costing system **did** deliver clear, accurate and timeous costing information, several reasons were given in support of these answers. These reasons are as follows: Group 2 maintained that their gross profit percentage in relation to other hospital groups compared well, Group 4 and 5 added no statement to accompany their answers, Group 6 believes that under the current 'fee-for-service' billing system there is limited need to allocate costs to cases. Group 6 maintained that if 'alternative billing systems' are to be implemented in future, there would be a great need to collect essential costs to create an effective cost management system.

The costing system provides clear, accurate and timeous costing information

Figure 6

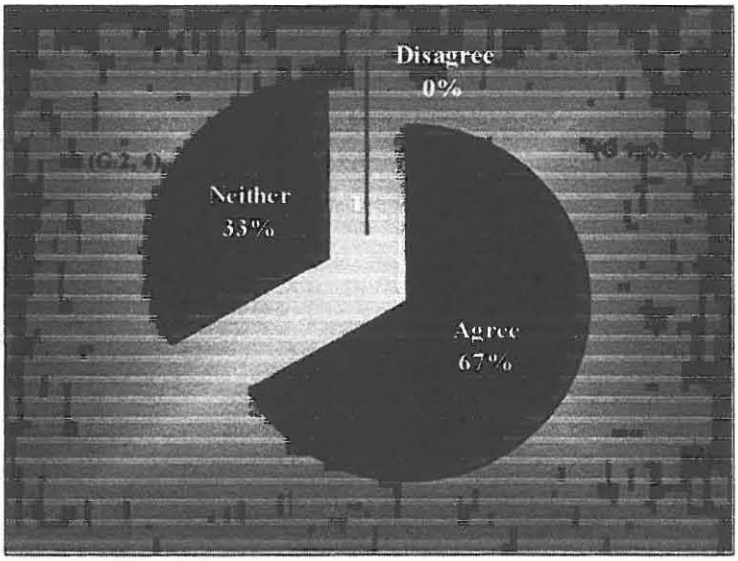


Need for an improved costing system

11. In question 11 (annexure C page 236) the need for an improved costing systems to support managerial decision making, yielded a mixed response. The response is presented by Figure 7 below, as follows: 67 % of the hospital groups agree and 33 % neither agree or disagree with the statement that there is a need for a newly improved costing system to support managerial decision-making. The 67 % of those who agreed include two of the bigger groups (Group 1 and 6), while the other big group, Group 2 neither agreed nor disagreed with the statements.

There is a need for a newly improved costing system to support managerial decision-making

Figure 7



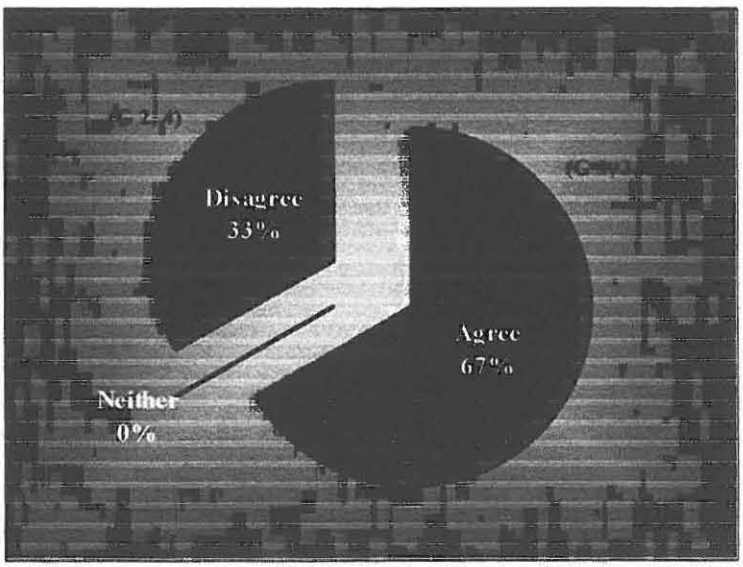
- In response to the answers supplied to question 11 (annexure C page 236), the groups that agreed with the statement maintained the following: Group 1 and 5 maintained that tariff negotiations necessitated better costing information and a more indepth knowledge of how volume would affect and change cost structures. Group 3 maintained that a computerised system was to be used from the year 2001 to analyse transactions and procedures from the hospital billing and administration system.

Difficulty in determining cost of activities

12. The statement that was made in question 12 (annexure C page 236) yielded mixed responses. The statement maintained that it is difficult to determine the cost of activities performed using information provided by the current accounting system. From Figure 8 below, Group 2 and 4 disagreed with the statement and maintained that it is not difficult to determine the cost of activities performed using the information provided by their current cost accounting system. Group 2 maintained that management reports were based on activities while Group 4 did not motivate its answer.

It is difficult to determine the cost of activities performed using the information in the current costing system

Figure 8



Groups 1, 3, 5 and 6 maintained that they did have difficulty in determining the cost of activities using their current cost accounting system. Two of the three bigger groups maintained that it is difficult to determine the cost of activities. Group 1 did not motivate its answer, but Group 6 maintained that activities were defined as including medical procedures, and that costs were not allocated according to this basis. Group 3 agreed that it was difficult to determine costs of activities and as a follow up remark, maintained that the system that they envisage to implement in the year 2001 would help the group cost for activities. Group 5

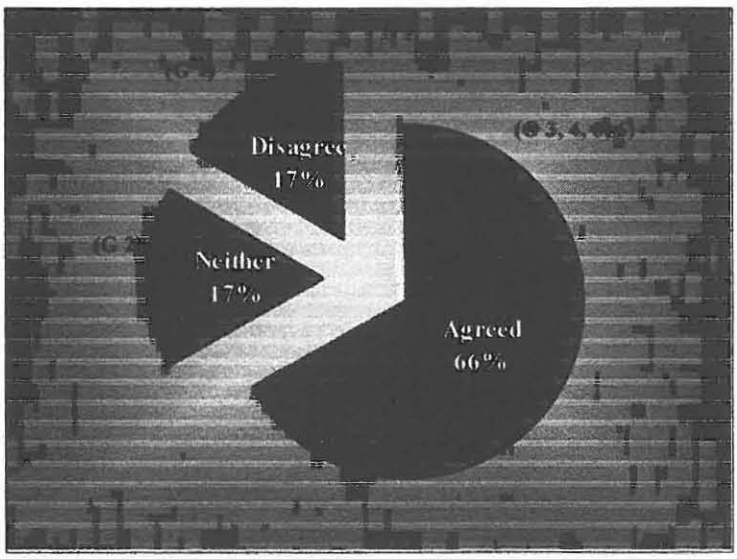
who agreed that it is difficult to cost activities maintained in the follow up remark that allocation of costs to activities was difficult and often arbitrary.

Improvement in tracing the cost of activities

13. In question 13 (annexure C page 236) the statement was made that improvement in tracing cost of activities performed in each business process would help process improvement efforts. The response from the groups were wide and mixed. From Figure 9 below, Group 1, the biggest group in this study, maintained that tracing costs of activities would not lead to process improvements efforts and maintained that costs were already allocated to activities. Group 2, neither agreed nor disagreed with the statement maintained that additional improvements would lead to minimal savings only.

Improvements in tracing costs of activities performed would improve process improvement efforts

Figure 9



The groups that agreed with this statement, Figure 9 above, provided mixed reasons for their responses. Group 3 maintained that this kind of improvement would lead to useful measurement tools and comparisons within the individual hospital in the group would be achievable. Group 4 and 6 did not

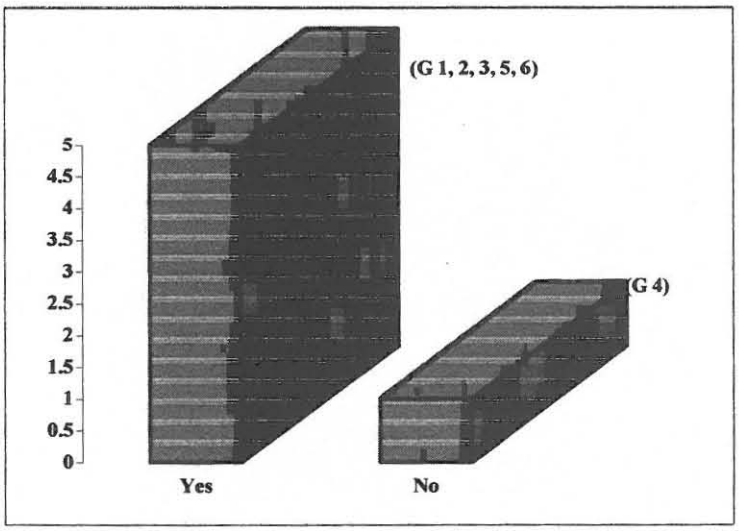
remark on the statement, Group 5 remarked that accurate process costing would make it possible to assess outsourcing opportunities more accurately and would improve cost efficiency within the hospital group.

Allocating costs to activities considered

15. In question 15 (annexure C page 237) the hospital groups were asked whether allocating costs to activities had ever been considered by the hospital group. Figure 10 below, presents the responses. The response was almost unanimous, all the groups except one maintained that allocating costs to activities had been considered before. It is also noteworthy that it is one of the smaller hospital groups, Group 4, that has not considered using cost allocation in their costing system.

Allocation of costs to activities has been considered

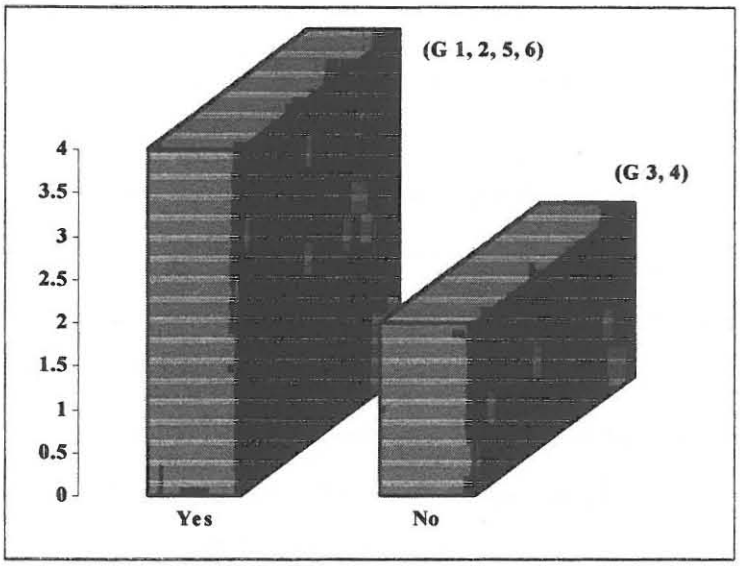
Figure 10



16. In response to the answers supplied to question 15, in question 16 (annexure C page 237) the groups were asked to indicate whether they had ever applied cost allocation to activities. Once again the response was mixed and presented by Figure 11 on page 170.

The allocation of costs to activities has been applied by the hospital group

Figure 11



The response to question 16 (annexure C page 237) was quite favourable. Of all the hospital groups that had considered using cost allocation techniques, almost all of them had applied it. Once again notice should be taken that both Groups 3 and 4, who have not used allocation techniques are also the two smaller groups in this study. Group 3 maintained that some type of cost allocation was a plan for the future, while Group 4 failed to respond to the follow-up question.

Group 2 maintained that cost allocation techniques had not been successful in that group as allocating overheads removed line management's focus from directly controllable expenses. Group 5 maintained that cost allocation had not been successfully applied in the group as it necessitated involvement from all levels of staff and that the allocation was often arbitrary and an administrative burden. Group 6 was of the opinion that cost allocation had achieved limited success because it held little commercial benefit for the group at this stage.

Important information unobtainable from current costing system

17. The answers received to question 17 (annexure C page 238) were varied and mixed. The question asked whether there was any information that was important to the hospital group's financial position, but could not be obtained from the current accounting system.

From Table 6 below, the following: 66.67 % of the hospital groups agreed that there was information that they could not get from their current accounting system, while 33.33 % maintained that all the information needed was available to them. The 66.67 % was made up of Groups 1, 3, 5 and 6. Group 1 maintained that they would like information relating to the costs of specific procedures (i.e. hip replacement), Group 3 needed accurate revenues per ward to be made available, Group 5 needed ABC figures, while Group 6 needs case mix adjusted cost of delivery per procedure within diagnosis related groupings (DRGs) by medical aid schemes, age, sex, and other risk predicting demographic factors.

Important information cannot be obtained from current accounting system

Table 6

Hospital group	Yes	No
Group 1	X	
Group 2		X
Group 3	X	
Group 4		X
Group 5	X	
Group 6	X	
	4	2

18. and 19. These questions (annexure C page 238) were open questions, where the groups had to write their opionins. The groups had to relate the positive and negative aspects of the hospital group's current costing systems. Positive and negative aspects or areas were summarised as follows:

Group 1 *Positive* – Simplicity

Negative – None

Group 2 *Positive* – Uniform reporting making comparisons possible

Negative – Time consuming to prepare

Group 3 *Positive* – None

Negative – None

Group 4 *Positive* – Accuracy

Negative – None

Group 5 *Positive* – Accuracy of medicine and consumable item costing, Accurate job allocation

Negative – No information available on costs per activity

Group 6 *Positive* – Simplicity, Alignment with financial systems and performance measurement and reward systems.

Negative – Lack of clinical specificity for measurement of service level efficiencies

7.2.3. Section C – Management

In order to fulfil another aspect of the secondary objective, paragraph 1.4. page 3, questions relating to ABMA that involved the three management functions were investigated. In order to achieve successful management practices in any organisation, the duties of planning, control and decision-making need to be highlighted. One of the pre-requisites of an ABM system is an effective and efficient management process.

a) Planning

20. All the hospital groups that answered question 20 (annexure C page 238) agreed that budgets were used for planning and forecasting purposes.

- In the follow-up to question 20, (annexure C page 239) the hospital groups were required to state which of the mentioned budgets were used for planning and forecasting purposes. From the results obtained through the use of Table 7 (page 173), a favourable result is evident. This indicates that all the hospital groups, regardless of the type of budget used, made use of budgets for planning and forecasting purposes. This reflects favourable when possible implementation of an ABMA system is considered.

Type of budget used by the private hospital groups

Table 7

Type of Budget	Number of Respondents	% Respondendents
Static	1	16.67
Zero-based	3	50
Activity-based	0	0
Both a + b	2	33.33
Other	0	0
Total	**6**	**100**

b) Control

21. In question 21 (annexure C page 239) the hospital groups were required to identify the budgetary system used to control costs. From Table 8 below, it is clear that only Group 2 indicated that they use another form of budgetary system for control system.

The budgetary system used to control costs

Table 8

Type of Budget	Number of Respondents	% Respondendents
Static	5	83.33
Flexible	0	0
Other	1	16.67
Total	**6**	**100**

- In the follow-up to question 21 (annexure C page 239), Group 2 explained that they measure against the static budget as well as against forecasts, while deviations must be explained. Based on permanent deviations, forecasts are adjusted.

- In the next follow-up to question 21 (annexure C page 239) the hospital groups were asked to identify the kind of variances that were determined from the budget. The type of variances that were determined are presented in Table 9 page 174.

Variance analysis

Table 9

Variances	G 1	G 2	G 3	G 4	G 5	G 6
Efficiency	Yes	Yes			Yes	
Quality	Yes	Yes				
Quantity	Yes		Yes			
Cost				Yes		Yes
Volume (capacity)						Yes
Mix / Yield						Yes

- In the last follow-up to question 21 (annexure C page 239) the hospital groups were required to state what the end result of the variances identified by Table 9 above. The results of this question indicated that all the hospital groups do take some sort of action to rectify, explain and prevent these variances.

Table 10 below outlines the various actions taken by the hospital groups as a result of the variances, as reported in Table 9 above. Group 1 and 5 react to the variances by only writing up reports - no other action is taken. Group 4 takes action while no reports are written or formulated.

Action taken from variances

Table 10

Action taken Variances	G 1	G 2	G 3	G 4	G 5	G 6
Reports written	Yes	Yes	Yes		Yes	Yes
Suggestions given		Yes	Yes			
Action taken			Yes	Yes		Yes
Performance bonuses						Yes
Internal audits						Yes

Group 2, 3 and 6 have a list of consequences to the variances. The most important consequence listed by Group 6, in Table 10 above, is the action of performance bonuses. This indicates that variance control is an important factor and performance bonuses are used as an incentive used by the hospital group to exercise tighter variance control.

c) Decision-making

22. In question 22 (annexure C page 240), centralisation or decentralisation of the decision-making process were addressed. From Table 11 below, the respondents that indicated 'Other' as an option were Group 2 and 6.

Centralisation or decentralisation

Table 11

Operate	Number of Respondents	% Respondendents
Centralised	3	50
Decentralised	1	16.67
Other	2	33.33
Total	**6**	**100**

In the follow-up to question 22 (annexure C page 240) these groups clarified their answers as follows: Group 2 explained its answer by stating that operational (day-to-day) matters used decentralised decision-making techniques, whereas corporate matters enjoyed centralised decision-making processes. Group 6 maintained that it uses both centralised and decentralised decision-making processes.

Groups 3, 4 and 5 (Table 11 above) make up the 50 % of respondents that use a centralised decision-making process. It is important to note that these are also the three smaller groups within the pool of hospital groups. Group 3 has 3 individual hospitals, Group 4 has 4 individual hospitals and Group 5 has 6 individual hospitals (Figure 1 page 157). In these three cases centralised decision-making is justified, as the area of influence is not great.

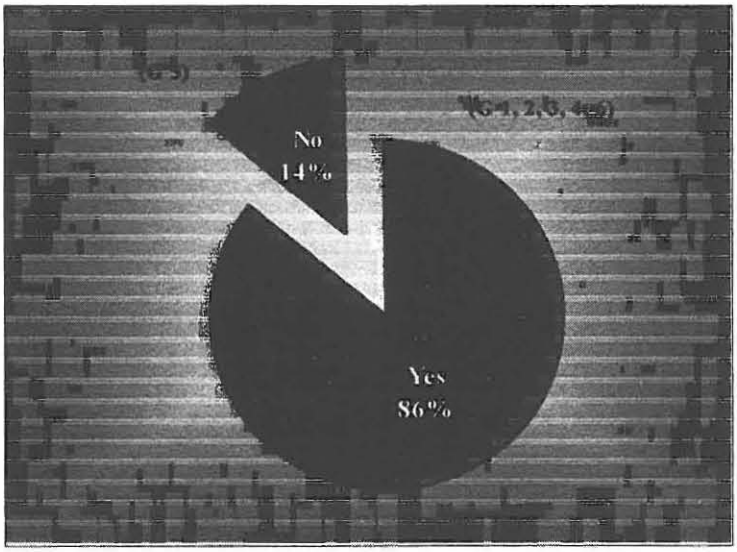
The remaining three groups are the larger groups where Group 1 has 70 individual hospitals, Group 2 has 34 individual hospitals and Group 6 has 44 individual hospitals under its control (Figure 1 page 157). Centralisation would not work in these cases. These groups opted for either decentralisation or a mixture of centralisation and decentralisation for their decision-making processes. It would be impossible for these hospitals to run on a centralised basis where decisions are made at a central point with no regard for individualism.

Provision for individual hospitals to partake in decision-making activities

23. In question 23 (annexure C page 240) the groups were asked whether provisions were made for the individual hospitals within the group to partake in decision-making activities that influence the group. Figure 12 below summarised the response.

Individual hospitals within the group partake in decision-making processes that influence the group

Figure 12



All the hospital groups, except Group 5, maintained that the individual hospitals did participate in the decision-making process. Group 5 represents one of the smaller hospital groups with only 6 individual hospitals (Figure 1 page 157). Most of the hospital groups (both big and small) are actively involving the individual hospitals in decision-making activities that influence the group. The results are also summarised in Table 12 page 177.

Individual hospitals participate in decision-making processes that influence the group

Table 12

	Number of Respondents	% Respondendents
Yes	5	83.33
No	1	16.67
Total	**6**	**100**

- In the follow-up to question 23 (annexure C page 240) Group 1 maintained that the individual hospitals within the group contribute significantly to decision-making activities, but neglected to elaborate on the answer. In Group 2, only recommendations were accepted from the individual hospitals. Group 3 held weekly meetings with hospital managers, managing directors and CEO's, Group 4 indicated that policy decisions were taken at the head offices. Group 5 did not answer the follow-up question, while Group 6 maintained that individual hospitals affected and are affected by the group financial reward systems, which are structured to encourage both individual and group performances.

24. In response to question 24 (annexure C page 240) whether individual hospitals participated in the decision-making process on activities that influence the individual hospitals, all six respondents indicated that the individual hospitals did participate in decisions that affect them.

- The follow-up response to question 24 (annexure C page 240), were as follows: Group 1 indicated that decisions affecting the individual hospitals were taken by the hospitals themselves. In Group 2 recommendations and implementations were taken by the individual hospitals. Group 3 maintained that hospital managers and management teams meet formally every week to decide on matters affecting day-to-day running of the hospitals. Group 4 stated that day-to-day decisions were made by the individual hospitals. Group 5 indicated that capital budget allocation and operational decisions were taken by the individual hospitals. Group 6 indicated that the individual hospitals set and motivate individual operating annual budgets.

Tariff determination

25. In question 25 (annexure C page 241) questions pertaining to the method the hospital groups used to determine tariffs for different procedures were asked. All the hospital groups indicated that they use a 'national schedule of fees' to determine tariffs for different procedures performed. The conclusion drawn here is that there is uniformity among hospitals and their groups in terms of tariff calculation for different procedures.

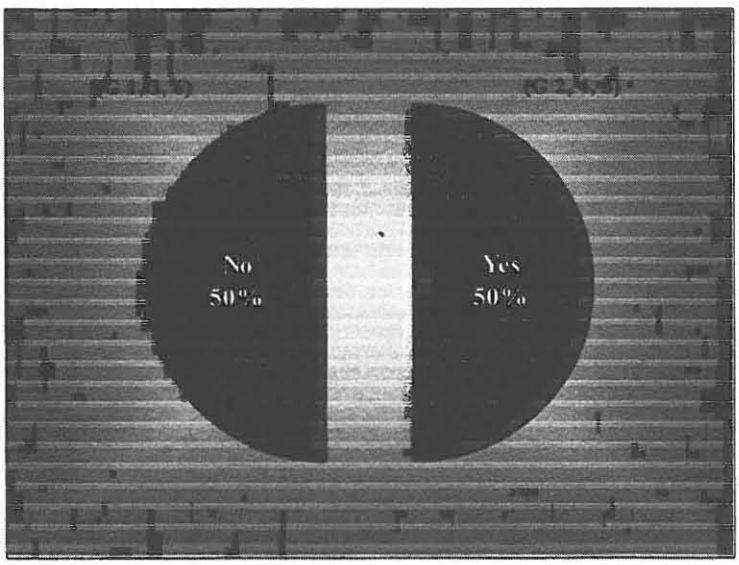
Determine a profit / loss on procedures

26. In question 26 (annexure C page 241), the hospital groups were asked whether they were in a position to determine if a profit or loss is realised with each procedure performed.

This question relates directly to one of the problem statements, as mentioned in paragraph 1.2. page 2. The response was as follows: 50 % of the hospital groups indicated that they were able to determine whether a profit or loss was realised, while the remaining 50 % indicated otherwise. Figure 13 below, indicates an even spread.

Can a profit or loss be determined for each procedure performed?

Figure 13



The hospital groups that indicated that they were in a position to determine a profit or loss on procedures performed include Group 2, 4 and 5. It is note-worthy that these groups are neither the smaller group, nor the bigger groups. Two of these are smaller groups, while one is a larger group. The groups that maintain that they are not in a position to determine a profit or a loss on procedures are Groups 1, 3 and 6. Once again two larger groups and one smaller group are represented here.

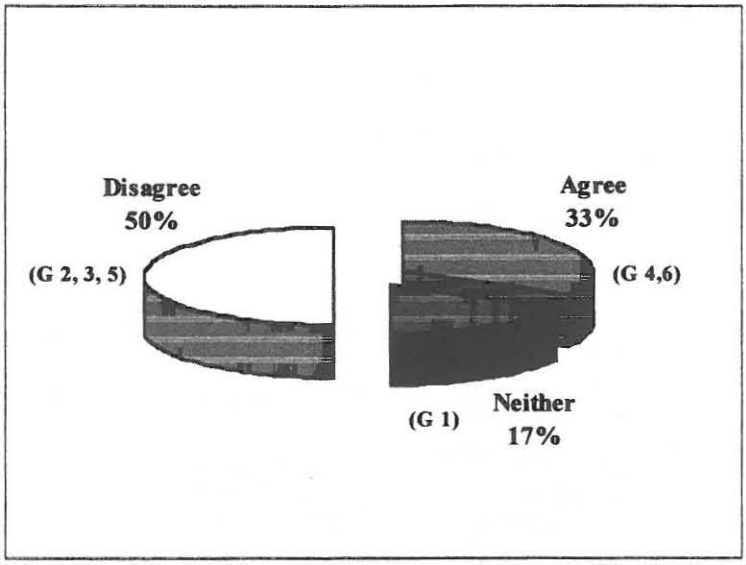
- In the follow-up to question 26 (annexure C page 241) the hospital groups were asked to motivate their answers. Unfortunately not many of the hospital groups participate in this effort. Group 2 indicated that they are in a position to determine a profit or loss on procedure due to the fact that they use an extensive data bank (warehouse). Group 3 stated that because they calculated profits or losses from financial / monthly management reports they were unable to determine whether a profit or loss is realised per procedure. Group 5 follow a simple formula to calculate a profit and loss on procedures: fees minus actual costs minus overheads allocated to process = profit or loss. Group 6 stated that it was not necessary to calculate profits and losses except in certain circumstances.

Current accounting system provides information necessary

27. In question 27 (annexure C page 241) the hospital groups were required to state whether they agreed or disagreed with the statement that their current accounting system provide all the information necessary for managerial decision-making. Figure 14 page 180, indicated that 50 % of hospital groups disagreed with the statement, thus maintaining that their current accounting system did not provide all the information necessary for managerial decision-making. Only Group 1 remained neutral by answering that it neither agrees nor disagrees with the statement made. The remaining 33 % stated that their accounting system did fulfil their needs for information used in managerial decision-making activities.

The current costing system provides all the information required for managerial decision-making

Figure 14



- In the follow-up to question 27 (annexure C page 241), the hospital groups were required to motivate their answers. Group 1 (neither agrees nor disagrees) maintained that the costing of procedures needed to be addressed. Group 2 (disagreed) stated that not only accounting information was used in management decision-making processes. Group 3 (disagree) maintained that the current system does not provide sufficient ward and procedure costs and statistics. Group 5 (disagreed) also maintained that their current system could not process a cost per activity. Group 6 maintained that the current system satisfied its needs for the time being only. Once 'risk-based reimbursement' was introduced, more advanced information would be required.

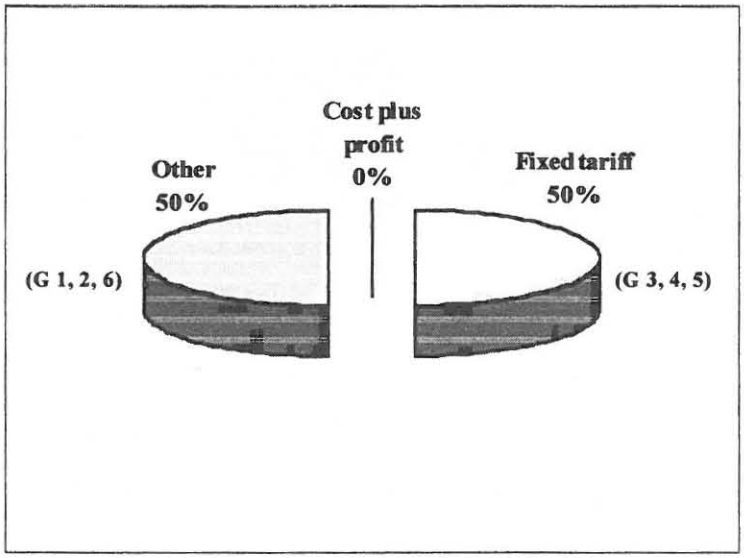
Determining accommodation tariffs

28. In question 28 (annexure C page 242) the groups were asked how the hospital groups determine accommodation tariffs. A point of note on Figure 15 page 181 is that 50 % of respondents, including Groups 1, 2, and 6 used another form of accommodation determination. These are also the three bigger hospital groups. Group 1 maintains that the tariffs are generally negotiated with their customers on a

percentage increase basis, while Group 2 uses the National schedule of fees, and Group 6 maintains that tariffs are adapted annually in consultation with the BHF.

Determination of accommodation tariffs

Figure 15



Position occupied by respondent of questionnaire

29. In question 29 (annexure C page 242) the respondents were asked to identify the position held within the group. Table 13 below captured the position held of the person who was responsible for completing the questionnaire.

Positions held by respondent

Table 13

Group	Position
1	Group management accountant
2	Financial manager
3	Group financial administrator
4	Group financial and administration manager
5	Group financial manager
6	Executive director

7.3. Summary

In the problem statement (paragraph 1.2. page 2) the need for accurate, clear and timeous costing information to determine the cost of the services delivered was identified. Pricing of services in the health care sector is another issue that was highlighted through the analysis of the questionnaires. Many of the hospital groups are content to accept the tariffs as set out by the BHF or even the fixed tariff method.

Many of these private hospital groups are not in a position to calculate the cost of their services and therefore cannot deviate from the set standards. This situation could be detrimental to the hospitals' long-term existence as they do not know and are not in a position to calculate whether they are losing out or winning with the tariffs as set out by BHF.

Through the analysis of the questionnaire, (annexure C page 233 – 242), information vital to the aims of the research was collected. Six completed questionnaires were received from the various hospital groups. In order to draw justified conclusions it is necessary to determine whether the 6 hospital groups are representative of the population that uses the private health care industry. Included in the 6 hospital groups that answered the questionnaire, are the three biggest groups. These 3 groups alone comprise 87 % of the market share of private hospital groups. The analysis and conclusions drawn from the 6 completed questionnaires may be considered as a fair representation of the situation in the private health care industry.

8. Conclusions

The findings from the analysis of the questionnaire are summarised in this chapter. Conclusions reached from the analysis of the questionnaires are also presented in this chapter.

TECHNIKON
VRYSTAAT/FREE STATE

8.1. Introduction

Service organisations operate differently to manufacturing concerns. Competitive strategy for a service firm is concerned less with a product itself and more with wider aspects of the organisation that make up the services. In service organisations competitive advantage is likely to be much more related to the extent to which customers value less tangible aspects of the organisation.

The conclusion from the literature study and the empirical section (through the analysis of the questionnaires) of the study are presented here.

8.2. Conclusions

The following numbers correlate with the numbers as used in chapter 7 paragraph 7.2. page 156.

8.2.1. Section A: General background

1. There are three dominant private hospital groups in South Africa. The three groups are Group 1, 2 and 6 and comprise 91.93 % of South Africa's private health care sector {Figure 1 page 157}.

2. The bed capacity of hospitals within the hospital groups is averaged at 101 – 150 beds, with two hospital groups, Group 4 and 6, having a higher bed capacity rate {Figure 2 page 158}.

3. The average bed occupancy rate is plotted at 51 – 60 %, with two hospital groups, Group 1 and 2, having a higher bed occupancy rate {Figure 3 page 159}.

It is evident that in addition to being the larger groups, Group 1 and 2 also enjoy an above average bed occupancy rate. This reflects favourably on the amount of patients serviced by the hospital groups, which in turn will reflect positively on the hospital groups' financial position.

8.2.2. Section B: Costing

Costing system

4. The private hospital groups in South Africa make use of a variety of costing systems. Group 5 and 6 use job costing, Group 4 uses process costing, while Group 1, 2 and 3 used a variety of systems {Figure 4 page 161 and Table 1 page 160}.

5. The majority of the hospital groups use actual costing as opposed to standard costing. Group1, 2, 3, 4, and 6 use actual costing and Group 5 use standard costing {Figure 5 page 162 and Table 2 page 162}.

Horngren *et al.* (2000:254) suggests that professional service organisations use budgeted (standard) costing systems rather than actual costing systems. He does not recommend the use of actual costing for the following reasons:

- Actual costs will not be available until after the job is completed. Cost reports for individual jobs can not be prepared until the end of the reporting period if actual compensation and actual hours billed to clients during the period were used in computing the professional labour cost rate. Hospitals function in a very competitive environment necessitating timely accurate information on a continuous basis.

- Actual costs may be subjected to short run fluctuations that managers view as misleading information for individual costing .

Standard costing is described by Ralph *et al.* (1991:429) as the costs expected to be achieved in a particular process under normal conditions. Standard costs are also known as planned costs, predicted costs, scheduled costs and specification costs. Standards enable management to make periodic comparisons of actual costs with standard costs in order to measure performance and correct inefficiencies.

Although literature prefers standard costing as the more advanced costing system, above actual costing (Horngren *et al.* 2000:2545), only Group 5 (16.67 %) indicated that the group uses standard costing. None of the repondents indicated that they did not use any of the mentioned costing systems.

Overhead costing

6. Only Group 4 indicated the allocation of overhead costs. The remaining 5 hospital groups {Table 3 page 163) maintained that they did not use any predetermined overhead rate to allocate overhead cost items.

7. Group 4 indicated the use of individual overhead rates for each cost centre for the determination of a predetermined overhead rate to allocate overhead cost items. The remaining hospital groups each had a different explanation on how overhead cost was treated.

8. Group 1 and 2 did not indicate any bases for the allocation of overhead cost items, while Group 3, 4, 5 and 5 indicated various items. Group 4 and 6 marked all the possible allocation bases. Group 3 and 5 were more conservative in their answer by indicating only 1 basis for allocation of overhead costs. No significant consistency in respect of allocation of overhead costs in private hospital groups can be deducted {Table 4 page 163}.

Overhead cost knowledge and allocation of overhead costs is almost non-existent in the hospital groups that participated in this study. Very important conclusions are drawn here. Firstly, in question 6 only 1 hospital group indicated the use of predetermined overhead rates for the allocation of overhead costs, the other hospital groups indicated that they did not use overhead allocation rates, secondly, in question 8 the hospital groups now indicated bases that they used to allocate overhead costs. How can they indicate a basis for allocation if they do not allocate overhead costs?

There is a lack of overhead cost and overhead allocation knowledge amongst all the hospital groups. A possible reason for this is that the hospital groups are more concerned with financial indicators rather than management information necessary for cost determination of services rendered.

Outsourcing

9. Outsourcing occurs in all the hospital groups, Group 1, 2 and 6, the larger hospital groups tend to outsource less of the their services while smaller hospital groups, Group 3, 4 and 5, outsource more of their services {Table 5 page 164}.

Horngren *et al.* (2000:383) describe outsourcing as the process of purchasing goods or services from outside vendors rather than producing the same goods or services within the organisation.

Johnson *et al.* (1999:197) states that traditionally outsourcing was concentrated on activities that were remote from the heart or nerve centre of the company. The classic outsourcing theory maintained that a company decides which of its functions give it competitive advantage and which do not. Non-core functions could be farmed out to specialists if they conduct them more cheaply or better, but core functions never.

While traditional outsourcing may be perfectly suitable for low-risk peripherial activities such as cleaning and catering, with high risk strategic functions or processes, hospitals want to retain more of a say in the way the work is done. To outsource core functions is to hand over the things that make the company what it is – and which makes its profits, that is why most of the hospital groups choose to outsource only non-core functions and keeping the vital profit making functions within the hospital.

The smaller groups must outsource various services because they are too small to be able to do or provide these services themselves. It is perhaps more profitable for Group 3 to outsource services such as radiology and pathology, which can be seen as a hospital function but perhaps these two services are not core-

functions for the hospital. All the groups outsource the laundry service. This is indicates that laundry is a service that is regarded as non-core.

The conclusion drawn here evidences that the two of the three larger hospital groups prefer to outsource only the non-core functions (the most commonly outsourced services include: catering, laundry, cleaning, security), which will better serve the needs of the hospital if outsourced, while the smaller groups, given their size, may be forced to outsource more services due to a lack of either the necessary expertise, space or resources.

Current costing system

10. Only 33 % of the hospital groups [Group 1 and 3] maintained that their current costing system did **not** provide clear, accurate and timeous costing information, and 67 % of the hospital groups [Group 2, 4, 5 and 6] were satisfied that their costing system did provide clear, accurate and timeous costing information {Figure 6 page 165}.

One of the problems facing the health care sector is the fact that the current costing system does not provide clear, accurate and timeous costing information. The statement of the problem, paragraph 1.2. page 2. With this question and the responses received this theory is proven.

Need for an improved costing system

11. 67 % of the hospital groups [Group1, 3, 5 and 6] agreed that there is a need for a newly improved costing system to support managerial decision-making, while only 33 % of the hospital groups [Group 2 and 4] disagreed to this statement {Figure 7 page 166}.

At this point a correlation may be drawn between two statements. The first statement maintained that 'the costing system provides clear, accurate and timeous costing information' {Figure 6 page 166} while the second statement states that 'there is a need for a newly improved costing system to support managerial decision-making' {Figure 7 page 166}.

The responses from the two statements will be captured by a correlation being drawn from the two responses received from all the groups. The correlation is as follows:

- Groups 1, 3, 5 and 6 maintained that 'there is a need for a newly improved costing system to support managerial decision-making'. To be shown on the table using the colour red. **{X}**

- Group 1 and 3 maintained that 'the costing system provides clear, accurate and timeous costing information'. To be shown on the table using the colour blue. **{Y}**

Correlation between Figure 6 (page 165) and Figure 7 (page 166)

Correlation Table 1

Groups	1	2	3	4	5	6
1	**XY**					
2						
3			**XY**			
4						
5					**X**	
6						**X**

From the above Correlation Table 1, it is clear that only Groups 1 and 3 maintain that the costing system that they use does not offer them clear, accurate and timeous costing information and that they indeed do need a newly improved costing system to support managerial decision-making. Groups 5 and 6 believe that there is a need for a new costing system but they believe that their current costing system provides them with all the information that they need. Group 5 and 6 are not very consistent in their answers.

The correlation between Figure 6 (page 165) and Figure 7 (page 166) indicated that two of the hospital groups [Group 1 and 3] voiced their dissatisfaction with the current costing system used by their hospital group. The remaining hospital groups were quite satisfied with their current systems. It is noteworthy that the two hospital groups that were dissatisfied are also two of the bigger hospital groups.

Difficulty in determining cost of activities

12. Four of the six hospital groups [Group 1, 3, 5 and 6] representing 67 % of the hospital groups, maintained that it is difficult to determine the cost of activities performed using the information in the current costing system, the two remaining hospital groups [Group 2 and 4] maintained that they were able to determine the cost of activities performed using the current costing system {Figure 8 page 167}.

From the fact that 67 % of the hospital groups have difficulty in determining the cost of activities, the conclusion drawn may suggest that an alternative form of costing system needs to be put in place in order to enable the hospital groups to determine the cost of activities. One of the main advantages of ABC is that it enables an organisation to calculate the exact cost of an activity. With ABMA an organisation may manage and control the cost of these activities more accurately, with the aim of reducing or eliminating non-value adding activities.

A correlation may be drawn between two statements. The first statement maintained that 'there is a need for a newly improved costing system to support managerial decision-making' {Figure 7 page 166}and the second statement maintains that 'it is difficult to determine the cost of activities performed using the information in the current costing system' {Figure 8 page 167}.

The responses from the two statements will be captured by a correlation drawn from the two responses received from all the groups. The correlation is as follows:

- Groups 1, 3, 5 and 6 maintained that 'there is a need for a newly improved costing system to support managerial decision-making'. To be shown on the table using the colour red. **{X}**

- Group 1, 3, 5 and 6 maintained that 'it is difficult to determine the cost of activities performed using the information in the current costing system'. To be shown on the table using the colour blue. **{Y}**

Correlation between Figure 7 (page 166) and Figure 8 (page 167)

Correlation Table 2

Groups	1	2	3	4	5	6
1	**XY**					
2						
3			**XY**			
4						
5					**XY**	
6						**XY**

From the above Correlation Table 2, it becomes clear that Groups 1, 3, 5 and 6 all have difficulty in calculating the cost of activities performed using information in the current costing system. These groups also all agree that they need a newly improved costing system to support managerial decision-making. The answers received from these groups is therefore consistent.

Once again the conclusion drawn points to the need for a new type of costing system that will support managerial decision-making and make determining the cost of activities performed either easier or possible.

Improvement in tracing the cost of activities

13. Four of the six hospital groups [Group 3, 4, 5 and 6] stated that improvements in tracing costs of activities performed would improve process improvement efforts, while the two remaining hospital groups [Group 1 and 2] had mixed reactions to this statement {Figure 9 page 168}.

Allocating costs to activities considered

15 and 16. Five hospital groups [Group 1, 2, 3, 5 and 6] have considered using allocation of costs in their costing systems, while only 4 hospital groups [Group 1, 2, 5 and 6] had actually applied cost allocation techniques in their past {Figure 10 page 169 and Figure 11 page 170}.

Unfortunately the hospital groups that had applied cost allocation techniques in their past did not motivate why they had not continued with the exercise. This will however not deter from the fact that cost allocation, in the form of ABC, if correctly applied has its advantages .

17. Four of the six groups maintained that there was information that was important to their decision-making abilities that they were unable to obtain from the current accounting system. Two of the bigger groups were among those that maintained that there was information that they could not obtain {Table 6 page 171}.

18 and 19. The response to these open questions was wide and varied. Positive aspects of the current costing systems used by the hospital groups included: Simplicity, uniform reporting techniques and the accuracy of job and cost allocation. Negative aspects were as follows: Time consuming system, no information available on cost per activity and the lack of information on efficiencies.

The overall conclusion that may be drawn here is that most of the hospital groups are content with their current costing system, but they would consider an alternative costing system if the new costing system would address the shortcomings of the current system.

8.2.3. Section C: Management

a) Planning

20. All of the hospital groups use a budgetary system for planning and forecasting purposes .

b) Control

21. Five hospital groups [Group 1, 3, 4, 5 and 6] use the static budgetary system for control purposes. Group 2 indicate that the group uses the static budget in conjunction with other tools for control purposes {Table 8 page 173}.

All the hospital groups calculate variances between the budgeted and actual figures. Variances are identified as either: efficiency, quality, quantity, cost, volume (capacity) or mix / yield variances {Table 10 page 174}.

The actions taken by the various hospital groups indicate that serious control measures is in place to act and deal with any deviation from the budget. Hospital group 6 uses the strongest control measure over these variances. Performance bonuses are linked to variance analysis and control. This indicates that variance control is an important issue and that deviations from the budget have far-reaching consequences – as far as the remuneration package provided to the employees {Table 10 page 174}.

c) Decision-making

22. A centralised decision-making approach is followed by 50 % of the hospital groups [Group 3, 4 and 5], while the remaining hospital groups are either decentralised [Group 1] or a combination of both is applied [Group 2 and 6] {Table 11 page 175}.

The conclusion drawn maintains that the smaller hospital groups (Figure 1 page 157) follow a centralised decision-making process. This can be justified by the small number of individual hospitals within each hospital group. However, the larger the group (Figure 1 page 157) the more difficult it will be to impose a centralised decision-making process.

Advocates of decentralised decision-making and the granting of responsibility to individual hospitals claims, according to Horngren *et al.* (2000:790), the following benefits:

- Creates greater responsibility to local needs,
- Leads to quicker decision-making,
- Increases motivation,
- Aids management development and learning,
- Sharpens the focus of managers.

Provisions for individual hospitals to partake in decision-making activities

23. In 86 % of the cases [Group 1, 2, 3, 4 and6], individual hospitals within the group did partake in the decision-making process that influences the hospital group, while all the individual hospitals actively

participated in the decision-making process that affected the individual hospitals {Figure 12 page 176 and Table 12 page 177}.

This active participation leads to a healthy relationship between the individual hospitals and the top management of the hospital group. Individual hospital managers get the opportunity to state their case in the best interest of the individual hospital, while top management of the group looks after the interests of the group as a whole.

Tariff determination

25. All the hospital groups use the 'national schedule of fees' to determine tariffs for different procedures. The conclusion drawn reflects a method followed by all the hospital groups in determining tariffs for different procedures.

The conclusion reached is that the bigger hospital groups all subscribe to a generally uniform way of tariff determination, all do this in consultation with the BHF, while the smaller hospitals individually subscribe to a fixed tariff for their tariff determination.

Determine a profit / or loss on procedures

26. Three of the hospital groups [Group 2, 4 and 5] indicated that they could determine a profit from procedures performed. While the remaining 3 [Group 1, 3 and 6] indicated that they are unable to determine whether a profit or loss is realised with procedures performed {Figure 13 page 178}.

Group 3 stated that because they calculated profits or losses from financial / monthly management reports they were unable to determine whether a profit or loss is realised per procedure. This situation seems very unusual - all the information needed for any type of calculation is available in the financial reports. It is solely a matter of getting the correct figures and information, and using a costing system (ABC or other) to calculate the cost of any procedure.

Group 5 indicated that it followed a simple formula to calculate a profit and loss on procedures performed. Their formula is as follows: fees minus actual costs minus overheads allocated to process = profit or loss. The problem arises in determining actual costs. Is the costing system used by the hospital group capable of determining actual costs if costs are not allocated to services?

Group 6 stated that it was not necessary to calculate profit and losses except in certain circumstances.

From the diversity of the answers received to this question, the conclusion drawn leads to the belief that the hospital groups have never had the need to determine a profit or loss on procedures and are unable to answer this question accurately.

Current accounting system provides information necessary

27. Three of the hospital groups [Group 2, 3 and 5] agreed that the current costing system does not provide all information required for managerial decision-making, while 2 hospital groups [Group 4 and 6] agreed that the current costing system did provide the information required for managerial decision-making and 1 hospital group [Group 1] remained neutral {Figure 14 page 180}.

A correlation may be drawn between two statements. The first statement maintained that 'there is a need for a newly improved costing system to support managerial decision-making' {Figure 7 page 166}and the second statement maintains that 'the current costing system provides all the information required for managerial decision-making' {Figure 14 page 180}.

The responses from the two statements may be captured by a correlation drawn from the two responses received from all the groups. The correlation is as follows:

- Groups 1, 3, 5 and 6 maintained that 'there is a need for a newly improved costing system to support managerial decision-making'. To be shown on the table using the colour red. **{X}**

- Group 2, 3 and 5 disagreed with the statement that 'the current costing system provides all the information required for managerial decision-making'. To be shown on the table using the colour blue. **{Y}**

Correlation between Figure 7 (page 166) and Figure 14 (page 180)

Correlation Table 3

Groups	1	2	3	4	5	6
1	**XY**					
2		**Y**				
3			**XY**			
4						
5					**XY**	
6						**X**

From the above Correlation Table 3, Groups 1, 3, 5 and 6 agree that they need a newly improved costing system to support managerial decision-making, while Groups 2, 3 and 5 now also agree that their current system does not provide them with the information necessary for managerial decision-making.

It is noteworthy from above Correlation Table 3, that Group 6 fell out of this correlation by maintaining that their current system could be used for managerial decision-making functions. Group 2 also now features in the Correlation Table 3 (above) by maintaining that their current system could not be used for managerial decision-making functions. The answers received from these groups are consistent and relevant only in reference to Groups 1, 3 and 5. The rest of the groups are not consistent in their answers.

In the correlation that was drawn from the results of Figure 7 page 166, and Figure14 page 180, only the answers of Group 1, 3 and 5 were consistent. Group 6 did however maintain that the current costing system was meeting the hospital group's needs for the time being only. These hospital groups maintained that they need a new costing system because the current system does not provide clear, accurate and timely information and that the current system does not supply them with information to support managerial decision-making.

Group 3 maintained that the current system does not provide sufficient ward and procedure costs and statistics. Group 5 believed that their current system could not process a cost per activity. Group 6 maintained that the current system satisfied its needs for the time being only. Once 'risk-based reimbursement' was introduced, more advanced information would be required.

The costing system used by some of the hospital groups will be unable to meet the needs of the hospital groups in the future. An alternative costing system must be made available to the hospital groups that wish to remain competitive. This is also the support that is necessary to advocate the need for a new improved costing system to replace, soon to be outdated, systems.

8.3. Summary

Many of the questions asked in the questionnaire evoked thought amongst the respondents. The vagueness with which some of the questions were answered indicated that the questions have, perhaps, never been asked before. Even to the point where thoughts surrounding those issues had never been raised. Perhaps the hospital groups never thought to ask these questions or never attempted to do the calculations necessary to answer relevant questions.

The most significant conclusion drawn from the analysis of the questionnaires was the issue of overhead costing. There is a very apparent lack of overhead costing knowledge. Few hospital groups use overhead costing in their calculations, some hospital groups only vaguely mention overhead costing, while others ignore overhead costing altogether. Overhead costing is an issue that needs to be attended to in order to enable hospitals to accurately determine hospital costs and the cost of their services.

Another problem identified in most of the hospital groups is the apparent lack of costing information. There is an abundance of financial information available through financial statements and financial reports, but costing information is clearly lacking.

The most significant conclusion relates directly to the statement of the problem (paragraph 1.2. page 2) and the aim of the study (paragraph 1.4. page 3). The costing systems used by the hospital groups are unable to meet the needs of the hospital groups in the future. An alternative costing system must be suggested to the hospital groups. This is also the support that is necessary to advocate the need for a new improved costing system to replace, soon to be outdated, systems. The advocated costing system to replace the current costing system is an ABMA system.

9. Recommendations

Recommendations regarding the application of management accounting principles and techniques in respect of ABMA are presented here. A scenario in support of ABMA is also sketched.

9.1. Introduction

Ramsey (1994:386) maintains that the cost accounting system in a hospital should include the following primary purposes:

- To promote cost efficiency within the hospital without sacrificing the institution's product and service quality,

- Allow the organisation to maximise its resources through product and service line management,

- Highlight opportunities for continued improvement of hospital operations.

When a costing system is suggested to any organisation, particularly to the hospital groups within the private health care sector, all the points mentioned by Ramsey (1994:386) need to be fulfilled in order to have a well-balanced smooth functioning costing system.

After an intensive literature study followed by a rigorous empirical section, the conclusion to this study has been reached. Recommendations based on the empirical section of the study are presented.

9.2. Recommendations

In line with the statement of the problem (paragraph 1.2. page 2), and following the conclusions drawn from the empirical research conducted (paragraph 8.2. page 183 – 196), various recommendations will be put forward in an attempt to solve the specific problem. The two problems identified by the statement of the problem (paragraph 1.2. page 2) are as follows: 1) the need for clear, accurate and timeous cost information, and 2) pricing of services rendered.

9.1. Introduction

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9.2.1. Accurate information

It is clear that there are mixed opinions, amongst the hospital groups that partook in this study, regarding the current costing system used by the various hospital groups. Upon reviewing the answers received to issues concerning the current costing system, Figures 6 (page 165), 7 (page 166), 8 (page 167), 9 (page 168) and 14 (page 180), highlight the final conclusion. A large portion of the hospital groups are not satisfied with the current costing system within their hospital group.

The problem with the current costing systems in use by the various hospital groups starts at the determination of the cost of a service and can be carried through to management functions that include planning, control and decision-making. It is important that a hospital group have the necessary information available upon request, but it is even more important that the hospital group have the correct information that is accurate and up-to-date to enable it to make the most correct decisions based on this information.

The competitive environment between the hospital groups make it vital that the information needed to make strategic changes and on-the-spot decisions be available immediately. The impact of ABC on costing information is immediate. Once the effects of ABC are reflected in the costing system and compared with the budget (that might still be based on an old system), negotiations with BHF may be re-opened. New rates and tariffs, based on the up-dated accurate figures, can be re-negotiated.

With an ABC system, the information needed to make decisions concerning cost drivers, activities, cost pools and the allocation of the overhead cost items to fully cost a service or product must be available. ABC will necessitate the information to be clear, accurate and up-to-date, thus fulfilling the need for accurate, clear and timeous costing information. Hospital groups may see ABC as a possible solution to overcome the problems they are facing with their current costing system.

9.2.2. Pricing

The problem facing the entire private health care sector is that the hospital groups must negotiate rates and tariffs with the BHF. Once these rates and tariffs are negotiated, both parties must accept the set tariffs. With the current costing systems used by the hospital groups, it is currently difficult to cost a service delivered. This inability to determine the cost of a service makes it almost impossible for a hospital group to negotiate a tariff or a rate with BHF.

Regarding the calculation of direct material and direct labour, all the hospitals are in a position to determine this. One of the biggest problems identified by the empirical section of the study was the apparent lack of overhead cost allocation knowledge. There is great disparity amongst the hospital groups regarding overhead costing. Some hospital groups indicated that they do not use a predetermined overhead rate, but in the follow up question, those same hospital groups marked overhead allocation bases (Table 3 and 4 page 163).

As only one group (Table 3 and 4 page 163) indicated the use of a predetermined overhead allocation rate, the conclusion that can be drawn from the response is that either the respondents were not clear on the issues surrounding overhead costs and the allocation thereof, or they did not understand the question, or no allocation what-so-ever was taking place in the hospital group. This specific overhead question also lays truth to the assumption that costing methods used in hospitals for overhead costing and the allocation of these costs are not clearly defined and / or effective.

It is vital that overhead costing and the allocation of overhead costing items may not be ignored, or its influences minimised. Overhead cost allocation needs to be highlighted as an issue that could affect the pricing of product and services rendered within the health care industry.

With an ABC system, cost drivers are identified, cost pools are created and overhead allocation to the product or service can occur more efficiently. Once overhead cost allocation takes place, a more

comprehensive cost can be attached to a service, whereby direct cost and indirect cost for each service can be calculated.

ABB will focus on the budgeted cost of activities necessary to deliver a service. Adopting an ABB approach to develop the operating budget will entail formulating budgets for each activity in its management system. These budgets can be compared with the actual figures for the period and the necessary adjustments can be made. ABB will then be used for planning and control purposes associated with the cost to render a service.

Management accounting functions are divided into three activities: planning, control and decision-making. The planning activity will help hospital management to identify the optimal tools necessary for annual / monthly or weekly budgetary needs, the type of budget necessary and the calculations involved, while the control activity will monitor the budget and react quickly to variances from the budget. The decision-making activity will ensure that the necessary decisions are taken at the appropriate times.

ABMA will be a vital tool when activities are considered and cost drivers are chosen. All value chain functions will be identified with the focus on recognising non-value adding activities. The value chain analysis and the activity analysis will assist in these functions. ABMA will also assist in performance management and may be used by management as a tool for continuous improvement.

9.3. Recommended guidelines

The following recommendations flow from the extensive literature review and empirical study.

- The point of departure is to highlight the information that the hospital groups need and are unable to obtain from their current costing system, in order to cost their services more accurately (for rate and tariff negotiations) and to enable management to fulfil its functions more effectively.

- Once the shortfalls of the current costing system has been identified, ABMA must be identified as a replacement system that will address the issues the old system was unable solve. ABC is the first technique to be implemented, followed by ABM and finally ABMA.

- On-site training seminars must be held throughout the information session introducing the ABMA system. Extensive on-site training is vital during the implementation stage – to introduce and educate all interested parties in hospital setting to the new concept of ABMA.

- These seminars and periodic meetings will have two main objectives: to ensure that the design and implementation of ABMA is on track and is appropriate, and to build commitment to the ABMA system and case management system among all the hospital staff.

- All relevant personnel need to be informed about this new business strategy. This would necessitate training of these personnel on the techniques required for successful application of Activity-based techniques. All levels of management must also be involved in either the pilot study or the full implementation of ABMA.

- Hospital administrators, nurses and doctors should be educated about the concepts and benefits of ABMA as their co-operation and understanding of the process is important when the principles of ABMA are applied.

- A comprehensive ABC model needs to be developed to cater for the hospital group's individual and specialised needs. This ABC model will, not only form the framework or basis to accurately cost for products and services, but will be the groundwork for the implementation of ABMA.

- This ABC model could be developed in the form of a pilot project with implementation in one section or department of the hospital, where after if successful in that section, full or further implementation in the rest of the hospital could be considered.

- Before moving from the pilot project to full implementation, it is necessary to identify shortfalls and problems within the project. These shortfalls and problems need to be examined and possible solutions need to be posed. These solutions need to be cultivated back into the pilot project to ensure that no further problems arise. As implementation occurs, progress must be monitored closely in an effort to detect inefficiencies and problems at an early stage with the view to rectify or make necessary changes.

9.4. Illustrative example – ABMA scenario

The development and implementation of ABC, ABM, ABB and ABMA on a hospital-wide basis, weaving together the principles and techniques of ABMA with current health care practices such as case management, critical path analysis and TQM will be outlined.

The following information regarding Hospital DEF is available:

1. Actual overhead cost = R 10 625 300.

2. Overhead cost is divided into the following related items:

a) Labour related.

b) Equipment related.

c) Space related.

d) Service related.

3. There are 10 processes that move a patient from pre-admission to discharge. These processes are as follows:

1. Admit patient
2. Cardiac catherisation
3. Administer ECG tests
4. Provide meals

5. Administer laboratory tests
6. Provide nursing care
7. Dispense medication
8. Provide therapy
9. Perform diagnostic imaging
10. Operate patients

4. The overhead cost identified and cost per unit in each of the 10 processes is as follows:

1. Admit patient - pool	=	R 400 000 = R 45.00 / patient
2. Cardiac catherisation - pool	=	R 1 420 000 = R 90.00 A; R 64.00 B; R 42.00 C
3. Administer ECG tests - pool	=	R 1 062 000 = R 25.00 / test
4. Provide meals - pool	=	R 800 000 = R 6.50 sp; R 3.50 reg; R 2.80 snack
5. Administer laboratory tests -pool	=	R 646 800 = ?
6. Provide nursing care - pool	=	R 2 662 000 = RR 4.20 / RVUs
7. Dispense medication - pool	=	R 450 000 = R 15.50 / medication order filled
8. Provide therapy - pool	=	R 932 000 = R 6.50 PT; R 7.80 CT; R 8.00 RT
9. Perform diagnostic imaging -pool	=	R 942 500 = R 37.50AAA;R 14.60BBB; R13.70CCC
10. Operate patients - pool	=	R 1 310 000 = R 15.00 / minute in OR
Total overhead cost	=	**R 10 625 300**

5. Process 5, 'Administer laboratory tests', has the following actual information:

Laboratory tests	Number of tests per year	Material & supplies per test	Direct labour hour (DLH) per test	Machine hour (MH) per test	Number of set-ups	Direct labour hours per set-up
P	200 000	R 5.00	0.05	0.220	10 000	0.05
Q	120 000	R 3.20	0.10	0.050	12 000	0.08
R	160 000	R12.50	0.04	0.600	32 000	0.12
S	10 000	R 2.00	0.10	0.828	5 000	0.15
Totals	490 000				59 000	

Wage rate – R 60.00 / direct labour hour per set up

Overhead cost:	**R**
Clerical support	294 000
Set-ups	181 500
Tools and equipment	61 712
Maintenance	92 568
Supply processing & distribution	17 020
	646 800

6. Budgeted and actual overhead cost for tests P, Q, R and S is as follows:

Budget:
Activity level total is **500 000 tests**
Test P - 205 000
Test Q - 125 000
Test R - 155 000
Test S - 15 000

Overhead cost is **R 615 000**
Test P - R 180 000
Test Q - R 100 000
Test R - R 300 000
Test S - R 35 000

Actual:
Activity level total is **490 000 tests**
Test P - 200 000
Test Q - 120 000
Test R - 160 000
Test S - 10 000

Overhead cost total is **R 646 800**
Test P - R 184 000
Test Q - R 108 720
Test R - R 317 200
Test S - R 36 880

7. Hospital DEF offers two services / procedures: DRG Alpha and DRG Beta. DRG Alpha is a procedure requiring high-level care with a 5-day stay (length of stay {LOS} = 5 days) in the hospital, after which the patient is moved to a care centre (nursing home). DRG Beta is a procedure requiring low-level care with a LOS in the hospital of also 5 days. The hospital uses current health care practices and procedures such as diagnosis-related groups (DRGs), patient-activity systems, case management and critical path analysis .

7. The two DRGs have the following detail:

DRG Alpha - 1 patient, 2 x procedure A, 7 x ECG tests, 9 special meals, 6 snacks, 10 x tests P, 20 tests S, 312 RVUs, 14 medication orders, 7 hours CT, 2 x procedures AAA and 1 hour in operating room (OR).

DRG Beta -1 patient, 1 procedure C, 4 x ECG tests, 9 regular meals, 6 snacks, 51 tests R, 20 tests S, 103 RVUs, 6 medication orders, 2 hours CT, 2 procedures CCC.

8. Direct material for the DRGs is as follows:

DRG Alpha – R 8451.00 and DRG Beta – R 2421.00.

9. There are 54 838 patient days.

Required:

Illustrate how ABMA will assist hospital DEF in its planning, control and decision-making functions.

(source:own research)

9.4.1. Developing the ABC model

The steps in developing and implementing of ABC received coverage in paragraph 3.3.4 page 69 therefore the steps will now only be applied to the scenario created.

Step 1: Form a cross-functional steering committee

In order to establish a process for implementation, a committee must be formed that will ultimately be responsible for the implementation and evaluation of the ABC system. The cross-functional steering committee will consist of the following members: a case management specialist, doctors, an accountant, an information system manager, medical records personnel and an outside consultant.

Step 2: Identify case types / Diagnosis related groups (DRGs) for analysis

Case types for analysis are usually selected based on case volume (high volume), financial impact (high cost, low profitability), variance measure (high variances from DRG estimates), quality assurance issues (high risk) or special interests (new services). For initial analysis, case types with predictable hospital delivery paths are selected. For purposes of this scenario two DRGs can be identified: DRG Alpha and DRG Beta.

Step 3: Profile the health care delivery system

Using case management and critical path analysis, activity analysis across all operations and processes that are required to move the patient from pre-admission to discharge is performed.

Case management is both a model and a technology for restructuring the clinical production process to ensure that a patient receives needed services in a supportive, efficient and cost effective manner. Critical path analysis is an abbreviated report that shows the key or critical incidents that must occur in a predictable and timely order to achieve the hospital's medical and financial goals. Case management along with critical path analysis provides a useful framework to analyse activities and to collect data on the type and amount of resources needed and actually used for the delivery of patient care. The data can be used to determine where process improvements can be made and where non-value added activities could be eliminated.

After applying case management and critical path analysis, all the operations and processes to move a patient from pre-admission to discharge were identified. First-stage cost drivers were used to trace the cost of inputs into cost pools for activity centres. First stage cost drivers were identified and are illustrated in Table 14 page 208.

The operations and processes necessary to move a patient from pre-admission to discharge are aggregated into various activity centres (cost pools). These cost pools also form the 'second-stage cost drivers'. The second stage cost drivers are illustrated in Table 15 page 209.

First-stage cost drivers

Table 14

*	**Hospital overhead cost**	**First-stage cost drivers**
Labour- related	Supervision	Number of employees/payroll Rands
	Personnel services	Number of employees
Equipment- related	Insurance on equipment	Value of equipment
	Medical equipment depreciation	Value of equipment/hrs used
	Medical equipment maintenance	Number of maintenance hrs
Space- related	Building rental	Space occupied
	Building insurance	Space occupied
	Electricity costs	Space occupied/volume occupied
	Building maintenance	Space occupied
Service- related	Central administration	Number of employees/patient volume
	Central services	Quantity/value of supplies
	Medical records, billing / accounting	Number of documents generated/patient volume
	Cafeteria	Number of meals/number of employees
	Information system	Value of computer equipment/programming hrs
	Laundry	Weight of laundry washed
	Marketing	Patient volume

(Udpa, 1996:83 Adapted)

Note:
* - page 203

Second-stage cost drivers

Table 15

* Activity centre (cost pool)	Activity	Cost driver
1. Admit patient	Reservation/scheduling, inpatient registration, billing and medical aid verification, admission testing, room/bed/medical assignment.	Number of patients admitted
2. Cardiac catheterisation	Scheduling, prepare patient, administer medication, cardiac catheterisation, film processing, interpret results, patient education	Number of procedures by type
3. Administer electrocardiogram (ECG) tests	Scheduling, prepare patient, perform ECG procedure, interpret results.	Number of tests
4. Provide meals/nutritional service	Plan meals, purchase supplies, prepare food, deliver food, clean and sanitise.	Number of meals by type
5. Administer laboratory tests	Clerical support, set-ups, tools & equipment, maintenance, supply, process & distribution.	Number of tests by type
6. Provide nursing care	Transport patients, update medical records, provide patient care, patient education, discharge planning, in-service training.	Number of relative value units
7. Dispense medication	Purchase drugs and medical supplies, maintain records, fill medication orders, maintain inventory.	Number of medication orders filled
8. Provide therapy	Schedule patients, evaluate patients, provide treatment, maintain records	Number of hours by type
9. Perform diagnostic imaging	Schedule patients, perform procedure, develop film, interpret results, transport patient.	Number of procedures by type
10. Operate patient	Schedule patients, order supplies, maintain supplies, instruments & equipment, providing nursing care, transport patient	Number of hours of surgery by surgical suite type

(Udpa, 1996:83 Adapted)

Note:

* - page 203

Step 4: Aggregate activities

The number of different actions performed in a typical hospital facility is so large that it is economically unfeasible to create an activity pool for each separate action. Therefore many individual actions were aggregated to form a few separate distinct activity pools. These activities are identified in Table 15 page 209. A single cost driver is then used to trace the cost of these activities to different procedures / patients.

Step 5: Analyse cost flow using cost drivers

The hospital cost management system is now used to develop cost information on different activities along the critical path from pre-admission to discharge. The procedure involves detailed analysis of the hospital's general ledger accounts. In collecting cost information it is necessary to combine certain ledger accounts that are associated with use of similar resources.

First-stage cost drivers, were used to trace the cost of inputs into cost pools for activity centres. Direct costs were assigned to activity centres. Common and indirect costs were assigned to different activity centres using first-stage cost drivers. Table 14 page 208, lists different first-stage cost drivers (allocation bases) used to allocate hospital overhead costs to activity centres.

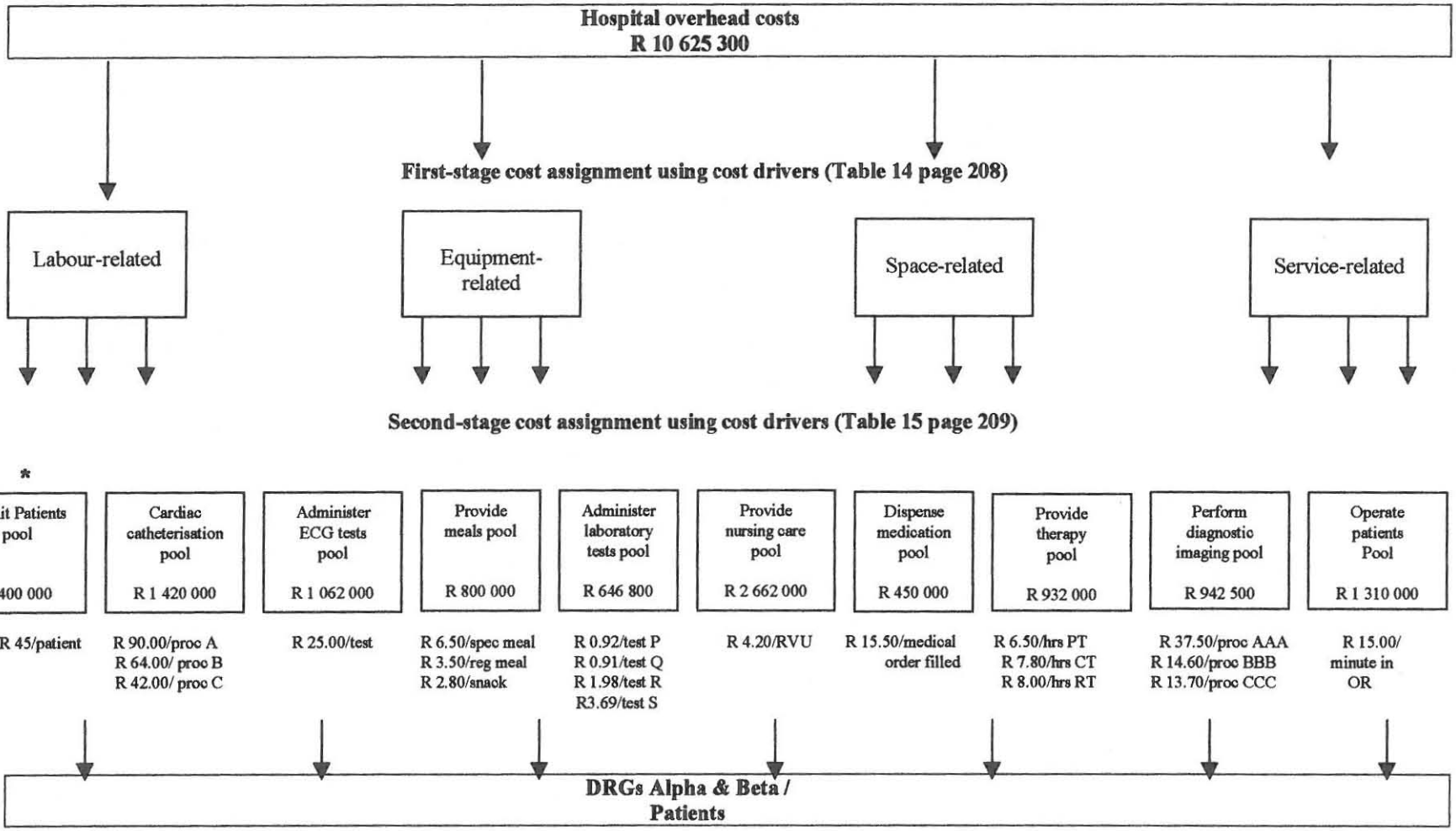
Second-stage cost drivers are used to measure the amount of activity resource consumed by different procedures (DRG Alpha and Beta). Table 15 page 209, lists the second-stage cost drivers that are used for the different activity centres.

Step 6: Allocate cost to the activity centres

The actual total overhead cost is given as R 10 625 300 in page 203. The 10 activities described on page 203 will now be regarded as the 10 activity centres. In Figure 16 page 211 the overhead cost allocated to each of the 10 activity centres, as described on page 203, is illustrated.

Graphic example of ABC

Figure 16



Note:
* - page 204
** - page 212

After having illustrated the break down of the actual overhead cost to each activity centre, the cost driver is used to further break down the overhead cost of the activity centre. For each of the 10 activity centres it is necessary to use the second-stage cost drivers in Table 15 page 209 to break down the overhead costs allocated to the specific pool. This was done in order to obtain a unit cost per cost driver.

For the purpose of this research, only the break down of the overhead cost of activity centre 5, 'administer laboratory tests' is illustrated (Figure 17 page 216). For the remaining 9 activity centres (Table 15 page 209), the cost per cost driver as given on page 204 apply:

1. Admit patient - pool	=	R 45.00 / patient
2. Cardiac catherisation - pool	=	R 90.00 / procedure A
		R 64.00 / procedure B
		R 42.00 / procedure C
3. Administer ECG tests - pool	=	R 25.00 / test
4. Provide meals - pool	=	R 6.50 / special meal
		R 3.50 / regular meal
		R 2.80 / snack
5. Administer laboratory tests - pool	=	R 0.92 / test P
		R 0.90 / test Q (Calculations shown
		R 1.98 test R on page 215)
		R 3.69 test S
6. Provide nursing care - pool	=	R 4.20 / relative value units (RVUs)
7. Dispense medication - pool	=	R 15.50 / medication order filled
8. Provide therapy - pool	=	R 6.50 / hour of therapy type PT
		R 7.80 / hour of therapy type CT
		R 8.00 / hour of therapy type RT
9. Perform diagnostic imaging - pool	=	R 37.50 / procedure AAA
		R 14.60 / procedure BBB
		R 13.70 / procedure CCC

10. Operate patients - pool = R 15.00 / minute in operating room (OR)

Overhead cost of activity centre 5, 'administer laboratory tests' – Figure 17 page 216:

From page 205 the first-stage cost drivers for this activity (to be used in Figure 17 page 216) are identified as the following:

1) Clerical support,
2) Set-ups,
3) Tools and equipment,
4) Supply processing and distribution.

To illustrate the break down of the overhead cost of this activity centre the following information was obtained:

From the information available on page 203, the following calculations are made:

Allocation bases		**Formula**		**Rate**
a) Clerical support	-	R 294 000 / 490 000 tests	=	R 0.60
b) Set-ups	-	R181 500 / 6050* set-up per DLH	=	R 30.00
c) Tools & equipment	-	R 61 712 / 154 280** MH	=	R 0.40
d) Maintenance	-	R 92568 / 154 280 MH	=	R 0.60
e) Supply, processing & distribution	-	R 17 020 / R 3404 000***	=	R 0.005

Note:

*** = Number of set ups x Direct labour hour per set up**

P = 10 000 x 0.05 = 500
Q = 12 000 x 0.08 = 960
R = 32 000 x 0.12 = 3 840
S = 5 000 x 0.15 = 750

Set ups per DLH = 6 050

**** = Machine hours (MH)**

P = 200 000 x 0.220 = 44 000
Q = 120 000 x 0.050 = 6 000
R = 160 000 x 0.600 = 96 000
S = 10 000 x 0.828 = 8 280

Machine hours = 154 280

***** = Material supplied per number of tests**

P = 200 000 x R 5.00 = R1 000 000
Q = 120 000 x R 3.20 = R 384 000
R = 160 000 x R 12.50 = R 2 000 000
S = 10 000 x R2.00 = R 20 000

Material supplied per number of tests = R 3 404 000

Total overhead cost to test P, Q, R and S can now be calculated. These calculations are as follows:

Administer laboratory test – activity centre 5	**P**	**Q**	**R**	**S**
Overhead cost:				
a) Clerical support	(200000xR0.60) 120 000	(120000xR0.60) 72 000	(160000xR0.60) 96 000	(10000xR0.60) 6 000
b) Set-ups	*(500xR30.00) 15 000	(960xR30.00) 28 800	(3840xR30.00) 115 200	(750xR30.00) 22 500
c) Tools & equipment	**(44000xR0.40) 17 600	(6000xR0.40) 2 400	(96000xR0.40) 38 400	(8280xR0.40) 3 312
d) Maintenance	**(44000xR0.60) 26 400	(6000*R0.60) 3 600	(96000xR0.60) 57 600	(8280xR0.60) 4 968
e) Supply processing & distribution	***(1000000xR0.005) 5 000	(384000xR0.005) 1 920	(2000000xR0.005) 10 000	(20000xR0.005) 100
Overhead allocated	**R 184 000**	**R 108 720**	**R 317 200**	**R 36 880**

Overhead cost allocation:

P = R 184 000
Q = R 108 720
P = R 317 200
S = R 36 880

} **R 646 800 = Overhead allocated to activity centre 5.**

It is now possible to calculate the overhead cost per laboratory test. These calculations are as follows:

P = R 184 000 / 200 000 tests = R 0.92 / test

Q = R 108 720 / 120 000 tests = R 0.906 / test (rounded off R 0.91)

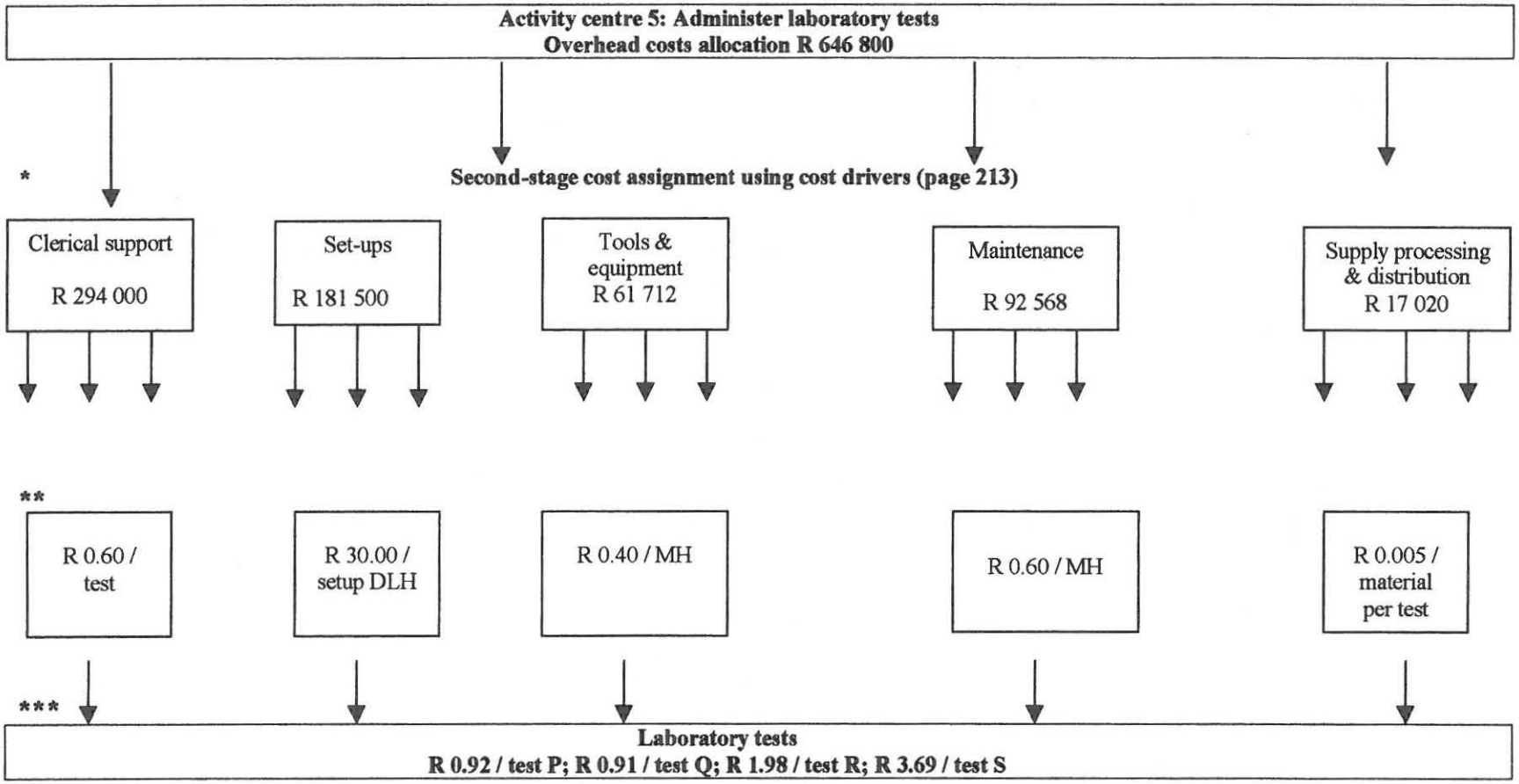
R = R 317 200 / 160 000 tests = R 1.9825 / test (rounded off R 1.98)

S = R 36 880 / 10 000 tests = R 3.688 / test (rounded off R 3.69)

Figure 17 on page 216 traces overhead cost allocation to tests P, Q, R and S.

Graphic example of ABC: Administer laboratory tests

Figure 17



Note:
* - page 213
** - page 213
*** - page 215

The last step in this process is to calculate the cost of each activity centre of DRG Alpha and Beta. These calculations are as follows.

Overhead cost per DRG Alpha

Activity centre	**Number of transactions**	**Rate / transaction**	**Over-head cost**
1. Admit patient	* 1 patient	** R 45.00 / patient	= R 45.00
2. Cardiac catheterization	2 procedure A	R 90.00 / procedure A	= R 180.00
3. Administer ECG tests	7 tests	R 25.00 / test	= R 175.00
4. Provide meals	9 special meals	R 6.50 / special meal	= R 58.50
	6 snacks	R 2.80 / snack	= R 16.80
5. Administer laboratory tests	10 tests P	R 0.92 / test P	= R 9.20
	20 tests S	R 3.69 / test S	= R 73.80
6. Provide nursing care	312 RVUs	R 4.20 / RVU	= R 1 310.40
7. Dispense medications	14 medication orders	R 15.50 / medication	= R 217.00
8. Provide therapy sessions	7 hours CT	R 7.80 / CT	= R 54.60
9. Perform diagnostic imaging	2 procedures AAA	R 37.50 / procedure AAA	= R 75.00
10. Operate patient's	1 hour in OR	R 15.00 / minute	= R 900.00
		Total overhead cost	**= R 3 115.30**

Note:

* - page 205

** - page 212

Overhead cost per DRG Beta

Activity centre	Number of transactions	Rate per transaction	Over-head cost
1. Admit patient	*1 patient	** R 45.00 / patient	= R 45.00
2. Cardiac catheterization	1 procedure C	R 42.00 / procedure C	= R 42.00
3. Administer ECG tests	4 tests	R 25.00 / test	= R 100.00
4. Provide meals	9 regular meals	R 3.50 / regular meal	= R 31.50
	6 snacks	R 2.80 / snack	= R 16.80
5. Administer laboratory tests	51 tests R	R 1.98 / test R	= R 100.80
	20 tests S	R 3.69 / test S	= R 73.80
6. Provide nursing care	103 RVUs	R 4.20 / RVU	= R 431.80
7. Dispense medications	6 medication orders	R 15.50 / medication	= R 93.00
8. Provide therapy sessions	2 hours CT	R 7.80 / CT	= R 15.60
9. Perform diagnostic imaging	2 procedures CCC	R 13.70 / procedure CCC	= R 27.40
10. Operate patient			= R 0.00
		Total overhead cost	**= R 977.70**

Note:

* - page 205

** - page 212

Step 6: Educate hospital staff about the ABC system

On-site training seminars must be held throughout the design and implementation stage to introduce and educate hospital administrators, nurses and doctors to the concept and benefits of ABC, case management and critical path analysis. Hospital staff meetings must be held to report progress and discuss any problems that the steering committee has encountered.

This is also done to allow these relevant parties the opportunity to provide their inputs regarding practical problems that may be experienced at ground-root level, so that these problems may be addressed in the new system.

These seminars and periodic meetings have two main objectives: to ensure that the design and implementation is appropriate and to build commitment to the ABC and case management system among the hospital staff.

9.4.2. Applying ABMA - planning

Step 7: Using ABMA as a planning function

The domain of ABC is the reporting and analysis of past and current costs. A natural extension is to use an activity-based approach in the budgeting of future costs. ABB focuses on the budgeted cost of activities necessary to produce and sell products and services. Adopting an ABB approach to developing the operating budget entails formulating budgets for each activity in the activity management system.

The following information for activity centre 5 'administer laboratory tests' is obtained from the information supplied on page 205:

Administer laboratory tests - activity centre
Cost driver = number of tests per type

Budget:			**Actual:**		
Activity level total is **500 000 tests**			Activity level total is **490 000 tests**		
Test P	-	205 000	Test P	-	200 000
Test Q	-	125 000	Test Q	-	120 000
Test R	-	155 000	Test R	-	160 000
Test S	-	15 000	Test S	-	10 000
Overhead cost is **R 615 000**			Overhead cost total is **R 646 800**		
Test P	-	R 180 000	Test P	-	R 184 000
Test Q	-	R 100 000	Test Q	-	R 108 720
Test R	-	R 300 000	Test R	-	R 317 200
Test S	-	R 35 000	Test S	-	R 36 880

From the amounts above, it is possible to calculate a budgeted cost per test.

Budgeted cost per test:

Test P - R 0.878 (rounded off R 0.88)

Test Q - R 0.80

Test R - R 1.935 (rounded off R 1.94)

Test S - R 2.333 (rounded off R 2.33)

Actual cost per test: (page 215)

Test P - R 0.92

Test Q - R 0.91

Test R - R 1.98

Test S - R 3.69

Information obtained from the variance analysis reports of all the patients leads to the following variances:

Patient variance	=	1 500 tests	**variance =10 000 tests (500 000 – 490 000)**
Care-giver variance	=	2 950 tests	
Environmental variances	=	3 800 tests	
Efficiency variance	=	1 750 tests	

These budgeted figures also provided the bases on which variance analyses were based. The variance analyses were shown in Figure 18 page 224. These figures can now be used to plan for the current and coming year. The variances and accompanying reports will be used for control purposes.

A budget can now be compiled from the amounts set out on page 220. This budget can be used as part of the master budget, and can be called 'schedule 5'.

Schedule 5: Overhead budget

At budgeted activity level of 500 000 tests

Overhead cost:	**R**
Test P	180 000
Test Q	100 000
Test R	300 000
Test S	35 000
Total overhead cost	**615 000**

9.4.3. Applying ABMA - control

Step 8: Evaluate and analyse data and results (ABMA)

The ABC system in combination with case management and critical path analysis provide critical financial and clinical measures to conduct variance analysis and evaluate the efficiency of the health care delivery system in terms of achieving expected patient outcomes, timely discharge of patients, appropriate utilisation of resources and cost control. ABMA as a tool for control purposes now comes to the fore.

Variances can be categorised in to the following groups:

Patient variances

These are due to complications or changes in the patient's health. For example, conditions such as allergic reactions, infections, diarrhoea and haemorrhages that affect the length of stay and costs.

Care-giver variances

These can be due to doctor variances or nursing variances. For example, inappropriate use of equipment, untimely tests, insufficient protection, inadequate discharge planning, failure to promptly notify appropriate personnel and inadequate patient education.

Environmental variances

Causes for these variances include equipment breakdown, unavailable beds, scheduling problems, laboratory delays and electricity failures.

Price variances

These are variances caused by paying higher than budgeted prices for supplies, medication, instruments and labour.

Efficiency variances

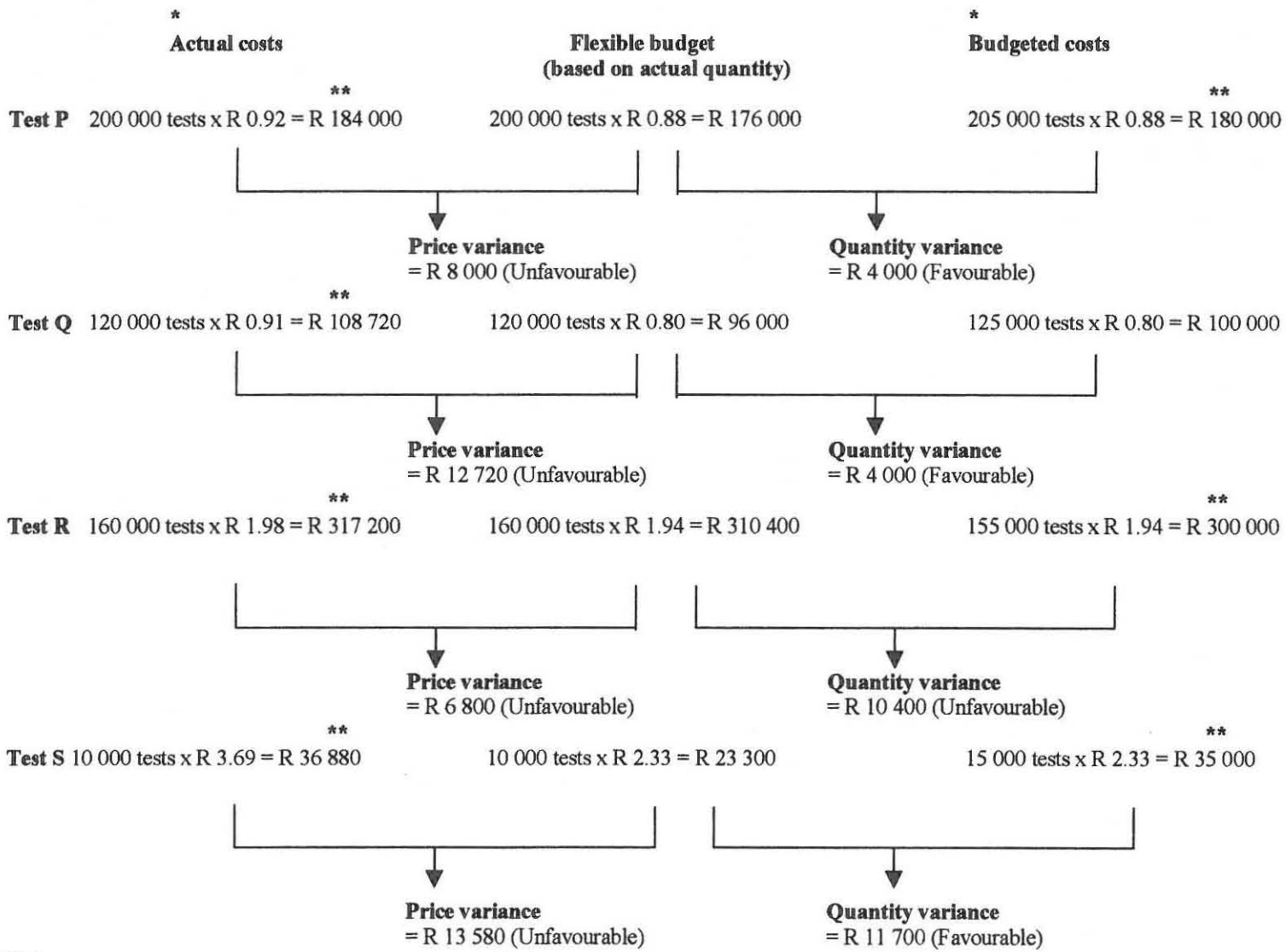
These usually include duplicated tests or laboratory work due to faulty procedure, wastage, patient delay, inadequate credit and medical insurance screening, staff schedules, ineffective record location and retrieval systems, and medication dispensing errors.

Variance analysis

A variance analysis report for each activity centre is completed during a patient's stay at the hospital. The report lists the different categories of variances, and resources lost or consumed as a result of the negative variance. Resources consumed are measured in units of cost drivers used specific to each activity centre. Figure 18 page 224, illustrates the application of variance analysis under ABMA.

The benefits of these variance analysis and reports are the following: the variance analysis is applied to each activity pool rather than the entire hospital's operation more homogeneous cost pools and more casual cost drivers are used in the analysis, and with the use of a detailed variance analysis report and the emphasis on 'activity analysis' under the ABC system, hospital administrators are better able to pinpoint weaknesses in the health care delivery system and focus their improvement efforts.

Summary variance report for activity centre 5 'administer laboratory tests'
Figure 18



Note:
* - page 219
** - Unit costs have been rounded off to correlate with the **total amounts** as on page 220

From Figure 18 page 224, the variances can be summarised as follows:

	Price variance	**Quantity variance**	**Total variance**
Test P	R 8 000 U	R 4 000 F	**R 4 000 U**
Test Q	R 12 720 U	R 4 000 F	**R 8 720 U**
Test R	R 6 800 U	R 10 400U	**R 17 200 U**
Test S	R 13 580 U	R 11 700 F	**R 1 880 U**
Total variance	**R 41 100 U**	**R 9 300F**	**R 31 800 U**

The variance total calculated above and in Figure 18 page 223 is R 31 800 U. From page 220, actual overhead cost was R 646 800 and budgeted overhead cost was R 615 000, therefore the variance calculated here is also R 31 800 U {R 646 800 – R 615 000}.

The variance identified in the scenario in paragraph 9.4.3. page 222 can now be calculated. These calculations are fictitious and are for illustrative purposes only and the amounts do not correlate with any amounts as mentioned before. These calculations are as follows:

Patient variance	=	1 500 tests	**variance =10 000 tests (500 000 – 490 000)**
Care-giver variance	=	2 950 tests	
Environmental variances	=	3 800 tests	
Efficiency variance	=	1 750 tests	

Test P

Patient variance	= 1 500 tests x R 0.88	Test P variance = R 8 800 U
Care-giver variance	= 2 950 tests x R 0.88	
Environmental variances	= 3 800 tests x R 0.88	
Efficiency variance	= 1 750 tests x R 0.88	

Test Q

Patient variance	= 1 500 tests x R 0.80	Test Q variance = R 8 000 U
Care-giver variance	= 2 950 tests x R 0.80	
Environmental variances	= 3 800 tests x R 0.80	
Efficiency variance	= 1 750 tests x R 0.80	

Test R

Patient variance	= 1 500 tests x R 1.94	Test R variance = R 19 400 U
Care-giver variance	= 2 950 tests x R 1.94	
Environmental variances	= 3 800 tests x R 1.94	
Efficiency variance	= 1 750 tests x R 1.94	

Test S

Patient variance	= 1 500 tests x R 2.33	Test S variance = R 23 300 U
Care-giver variance	= 2 950 tests x R 2.33	
Environmental variances	= 3 800 tests x R 2.33	
Efficiency variance	= 1 750 tests x R 2.33	

9.4.4. Applying ABMA – decision-making

ABMA is the final activity-based technique to be employed as a decision-making function. In applying this model, the figures obtained through ABC will be compared to the figures that would have been obtained had traditional costing methodology been used.

a) Using an ABC system the total cost for DRG Alpha and DRG Beta is as follows:

	DRG Alpha	DRG Beta
Direct costs (page 205)	R 8 451.00	R 2 421.00
Hospital overhead (page 216 and 216 respectively)	R 3 115.30	R 977.70
Total costs per DRG	**R11 566.30**	**R 3 398.70**

b) Using traditional costing methodology:

In a traditional cost accounting system, overhead cost will be allocated on a patient-day basis. The basis will be calculated as follows:

Hospital overhead allocated / Patient-day

= Hospital overhead cost / number of patient days

= R 10 625 300 (Figure 16 page 211) / 54 838 patient days (page 206)

= R 193.76 / patient days

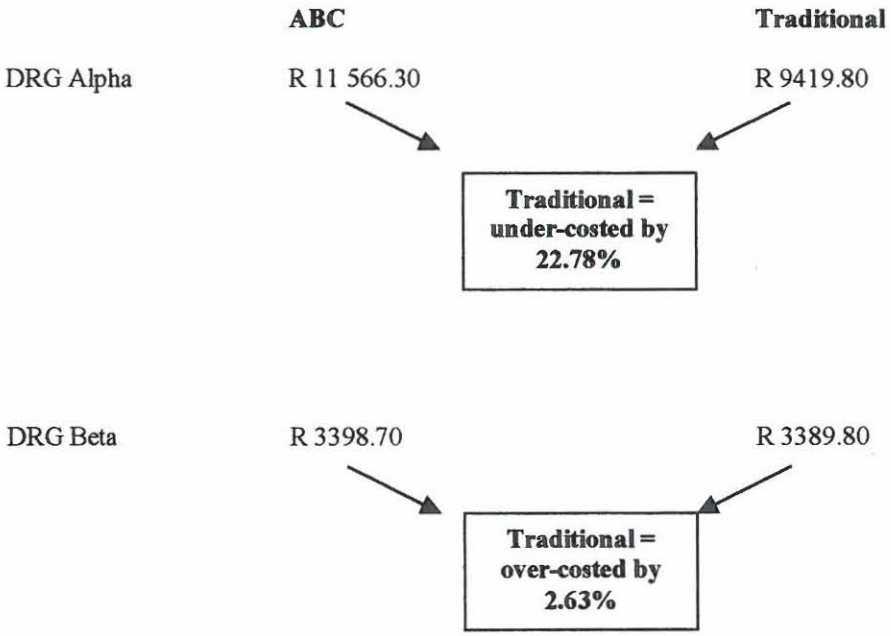
Costs assigned to DRG Alpha and DRG Beta using traditional costing would be as follows:

	DRG Alpha	**DRG Beta**
Patient days (page 205)	5	5
Hospital overhead allocated (5 patient days x R 193.76)	R 968.80	R 968.80

Using traditional costing the total cost for DRG Alpha and DRG Beta is as follows:

	DRG Alpha	**DRG Beta**
Direct costs (page 205)	R 8 451.00	R 2 421.00
Hospital overhead (as calculated above)	R 968.80	R 968.80
Total costs per DRG	**R9 419.80**	**R 3389.80**

When comparisons are drawn between an ABC system and a traditional costing system, the following figures can be compared:



In addition to the above comparisons, ABMA will now be used to identify any non-value added items. Through activity analysis, paragraph 4.4.1. page 87, and value chain analyses, paragraph 4.4.2. page 89, non-value added activities are reduced or eliminated out of the activity centre.

After the necessary calculations have been made and all reports have been written up, the final function of ABMA will be fulfilled. ABMA will assist management in their planning, control and decision-making function.

9.4.5. Summary – Illustrative example

From the scenario sketched of an ABMA system, the effects of an ABC system on a costing system are evident. Calculations according to an ABC system were implemented and the 'true' cost figure for each of the DRG cases were determined. The figures obtained from both a traditional and an ABC system was compared. The difference in the costs using the two systems was also illustrated.

TECHNIKON VRYSTAAT/FREE STATE

ABMA illustrates how the whole model is suited for: a) the planning function – through the setting up of the overhead budget, b) the control function – through the compilation of variances and variance analysis, and c) the decision-making function - by showing the effect of different approaches on the cost figures.

Finally ABMA fits into the scenario when the management team scrutinises the figures. Any non-value adding item will be investigated with the aim of reduction or elimination. Management will perform value chain analysis and activity analysis exercises to identify these non-value adding activities. ABMA may also be used by management as a tool for performance evaluations with the aim of creating a system of continuous improvement.

9.5. Summary

In the health care sector, too much emphasis is placed on the financial information required for the setting up of financial statements, while the information necessary for correct costing of relevant services and products is almost non existent.

More time and effort must be spent on cost and management accounting issues, in order to allow hospital groups to accurately price their services. The most important issue that needs attention is overhead costs. No apparent and definite procedure exists to deal with overhead costs. Some hospital groups do not even allocate overhead costs at all.

It is also not in patient's best interest if they pay more than necessary for the medical care that is provided merely because incorrect allocation of cost is applied. This will lead to an unfavourable situation where one patient is subsidising another. This will be contrary to a patients' right to manage and administer his / her own medical costs.

And finally after an extensive literature study followed by a rigorous empirical section, from which conclusions and recommendations were formulated, the hypothesis of this study can be proven. A private

hospital group using ABC as a costing system and ABMA as an advanced management tool can attempt to improve the management process in hospitals with regards to the costing of activities and the recovery of these costs.

A.

Annexure

Annexure A and B

The cover letter and affidavit that accompanied the questionnaire that was sent out to the private hospital groups.

Technikon
Vrystaat • Free State • Foreistata
Accounting Department • ☎ (051) 507 3131 / 083 285 5405 • E-mail:ccunha@.tofs.ac.za

July 2000

Dear Dr / Sir or Madam:

The evaluation of Activity-Based Management Accounting Practice in the health care sector, with specific reference to private hospital group in South Africa.

The health care sector is flooded by increasing patient loads, more complex procedures and ever-rising costs, with the cost of hospitalisation being the predominant cost factor absorbing most of the resources. Research conducted since the 1980's suggest that the current costing systems employed by hospitals often do not reflect timeous, accurate and relevant cost information. This situation often leads to management being unable to use this costing information for their management purposes. A combination of new Activity-based techniques, has been presented that deals with overhead costs and the allocation of these costs more accurately to cost centres, thereby supplying more accurate information to management for their decision-making and profitability analysis.

The purpose of this questionnaire is threefold: firstly to establish background information on the hospital, secondly to identify the cost structures currently used in the various private hospitals, and finally to assess the management style used by the hospitals. The applicability of Activity-Based Management Accounting in private hospitals can thereafter be assessed.

You are ***kindly*** requested to complete the questionnaire enclosed before the ***due date*** (as stated on the questionnaire), return it in the accompanying envelope. This questionnaire forms part of important research for a M-Tech study on **the evaluation of Activity-Based Management Accounting Practice in the health care sector.** All completed questionnaires will remain anonymous and all information will remain confidential. If you have any enquiries concerning the completion of the attached questionnaire, results and conclusions drawn you are welcome to contact me at the numbers listed above.

Yours sincerely

M - Tech student: Me. C. Cunha C Cunha.

Department Head - Accounting: Me. L. Rossouw LE Rossouw

Dean – Faculty of Management: Prof PG le Roux PG le Roux

Ek, CHRISTINA GONCALVES CUNHA, verklaar in Afrikaans onder Eed:

1.

Ek is 'n volwasse vrou van 26 jaar oud. Ek is woonagtig te Acasia meenthuis 65, Langenhovenpark, Bloemfontein. My telefoonnommer is: 0832855405. Ek is werksaam as Dosent te Rekeningkunde, Deptartement, Technikon Vrystaat, Parkweg 1, Willows, Bloemfontein. My telefoonommer is: 507 3131. ID – 7310180165082.

2.

Ek is 'n geregistreerde student by die Technikon Vrystaat, met studentenommer: 9203982 en is tans besig met my M Tech diploma in "Koste en bestuursrekeningkunde".

3.

My M Tech diploma se titel is: ***"Aktiwiteits gebasseerde bestuursrekeningkunde (Activity based management accounting)*** in privaat Hospitaalgroepe in Suid-Afrika.

4.

Om hierdie diploma te verwerf, het ek die hulp nodig van verskeie privaat Hospitaalgroepe in die land. Die hulp bestaan uit die beantwoording van 'n sekere vraelys, waaruit inligting bekom kan word vir aanwending in my verhandeling.

5.

Ek onderneem hiermee om die Hospitaalgroep, wat behulpsaam is met die voltooiing van die vraelys se identiteit anoniem te hou. Slegs die inligting sal gebruik word in die verhandeling, en sal so aangewend word dat geen afleidings gemaak sal kan word wat die oorsprong daarvan kan wees nie.

6.

Ek is vertroud met die inhoud van die verklaring en begryp dit. Ek het nie beswaar teen die aflê van die voorgeskrewe Eed nie. Ek beskou die voorgeskrewe Eed as bindend op my gewete.

Geteken: ..... C. Cunha
Bloemfontein
2000-09-01
09:37

Bostaande verklaring deur my afgeneem:

.....
MNR. A. COETSEE
INTERNE ONDERSOEKER

Annexure C

The questionnaire that was sent out to the private hospital groups.

Technikon Free State
M-Tech Research study – The evaluation of Activity-Based Management Accounting Practice in the health care sector

Questionnaire to Private hospital groups in South Africa.

The following questions are followed by a number of (different) possible answers. Please place one cross in the blank square opposite the answer you consider to be the most apt and representative of your answer. Where indicated more than one cross may be placed in the blank squares. When possible answers are not represented, only a short answer is required.

Please return this questionnaire before 18 September 2000 to the address as indicated at the end of this questionnaire.

Indicate with X | **For office use only**

Section A: General Background

1. How many hospitals does your Hospital group comprise of?

   .....

2. Please indicate the average bed capacity of the hospitals in your Hospital group.

a) 0 – 50 beds		1	
b) 51 – 100 beds		2	
c) 101 – 150 beds		3	
d) 151 – 200 beds		4	
e) 201 and more beds		5	**(2)**

3. What is the average bed occupancy rate, for your Hospital group, per financial year? (Please round off to the nearest percentage)

a) 0 - 40 %		1	
b) 41 % - 50 %		2	
c) 51 % - 60 %		3	
d) 61 % - 70 %		4	
e) 71 % and more		5	**(3)**

Section B: Costing

4. Which of the following costing systems does your Hospital group use?

a) Job costing		1
b) Process costing		2
c) Hybrid / Combination costing		3
d) None of the above		4 **(4)**

- If your answer to the above is "None of the above", please specify which costing system is used in your Hospital group?

.....

.....

5. In relation to 4.which costing systems is used by your Hospital group?

a) Actual costing		1
b) Standard costing		2
c) None of the above		3 **(5)**

- If your answer to the above is "None of the above", please specify which costing system is used in your Hospital group?

.....

6. Does your Hospital group allocate overhead costs according to a predetermined overhead rate?

a) Yes		1
b) No		2 **(7)**

7. If your answer to 7. is "Yes", which of the following is used by your costing system to allocate overhead cost items?

a) A single overhead rate for all centres		1
b) Individual overhead rates for each cost centre		2
c) Overhead rate for aggregated cost centres		3
d) Other		4 **(8)**

- If your answer to the above is "Other", please specify which basis is used to allocate overhead cost items.

.....

.....

- If your answer to 7. is "No", please specify how overhead costs are allocated in your Hospital group.

.....

.....

8. Which of the following bases does your Hospital group use to allocate overhead costs? (More than one item may be indicated).

a) Patient days / beds occupied	☐	1
b) Floor space	☐	2
c) Number of personnel	☐	3
d) Number of meals served	☐	4
e) Number of prescriptions filled	☐	6
f) Floor space per hospital bed	☐	7
g) Floor space per ward	☐	8
h) Floor space per occupied beds	☐	9
i) Other	☐	10 **(8)**

- If your answer to the above is "Other", please indicate which method is used to allocate overhead costs.

.....

.....

9. Are any of the services offered by the Hospital group outsourced?

a) Yes	☐	1
b) No	☐	2 **(9)**

- If your answer to the above is "Yes", please specify these services.

.....

.....

10. Do you regard your current costing system as providing clear, accurate and timeous costing information?

a) Yes		1
b) No		2 **(10)**

- Please explain (motivate) your answer to the above.

.....

.....

11. There is a need for a newly improved cost system to support managerial decision-making.

a) Agree (or strongly agree)		1
b) Neither agree or disagree		2
c) Disagree (or strongly disagree)		3 **(11)**

- Please explain (motivate) your answer to the above:

.....

.....

12. It is difficult to determine the cost of activities performed using information provided by your current accounting system.

a) Agree (or strongly agree)		1
b) Neither agree or disagree		2
c) Disagree (or strongly disagree)		3 **(12)**

- Please explain (motivate) your answer to the above:

.....

.....

13. Improvement in tracing the costs of activities performed in each business process would help your process improvement efforts.

a) Agree (or strongly agree)		1
b) Neither agree or disagree		2
c) Disagree (or strongly disagree)		3 **(13)**

- Please explain (motivate) your answer to the above:

.....

.....

14. Knowledge of the cost of activities would provide more useful information for process improvement programs than your current costing systems.

a) Agree (or strongly agree)	☐	1
b) Neither agree or disagree	☐	2
c) Disagree (or strongly disagree)	☐	3 **(14)**

- Please explain (motivate) your answer: to the above

.....

.....

15. Has allocating costs to activities (Activity-based techniques), ever been considered by your Hospital group?

a) Yes	☐	1
b) No	☐	2 **(15)**

16. Has allocating costs to activities (Activity-based techniques), ever been applied by your Hospital group?

a) Yes	☐	1
b) No	☐	2 **(16.1)**

- If your answer to the above is "Yes", has the allocation of costs to activities (Activity-based techniques) been applied successfully?

a) Yes	☐	1
b) No	☐	2 **(16.2)**

- If your answer to the above is "No", please explain why the allocation of costs to activities (Activity-based techniques) had not been applied successfully?

.....

.....

17. Is there any information that you regard as being important to your Hospitals group's financial position, but are unable to obtain this information from your current accounting system?

a) Yes		1
b) No		2 (17)

- If your answer to the above is "Yes", please supply this information that you are unable to obtain from your financial statement:

.....

.....

18. Please indicate positive aspects / areas of your current costing system.

.....

.....

19. Please indicate negative aspects / areas of your current costing system.

.....

.....

Section C: Management

a. Planning

20. Does your Hospital group make use of a budget for planning and forecasting purposes?

a) Yes		1
b) No		2 (20.1)

- If your answer to the above is "Yes", please indicate which of the following budgets are used for planning by your Hospital group.

a) Static budget (based on previous year(s) information)		1
b) Zero-based budgets		2
c) Activity-based budgets		3
d) Both a and b		
e) Other		4 (20.2)

- If your answer to the above is "Other", please specify which budget is used by your Hospital group for planning purposes.

.....

.....

- If your answer to 20. is "No", please shortly describe the planning procedure followed by your Hospital group.

.....

.....

b. Control

21. Which budgetary system does your Hospital group use to control its costs?

a) Static budget		1
b) Flexible budget		2
c) Other		3 **(21)**

- If your answer to the above is "Other", please specify which budget is used by your Hospital group for control purposes.

.....

.....

- Regardless of your answer in the two questions above, please indicate which variances (i.e. efficiency, quality, quantity etc.) are determined from the budgets.

.....

.....

- Please indicate the end result of the variances. (i.e. closed off to a specific account, reports written etc.).

.....

.....

c. Decision-making

22. Does your Hospital group operate on a centralised or decentralised basis regarding decision-making processes?

a) Centralised		1
b) Decentralised		2
b) Other		3

(22)

- If your answer to the above is "Other", please specify what decision-making processes are followed by your Hospital group.

.....

.....

23. Are provisions made for the individual hospitals within your Hospital group to partake in the decision-making activities that influence the **group**?

a) Yes		1
b) No		2

(23)

- If your answer to the above is "Yes", please indicate the extent to which the individual hospitals, within your Hospital group, participate in the decision-making processes influencing the **group**.

.....

.....

24. Are provisions made for the individual hospitals within your Hospital group to participate in the decision-making activities that influence the **individual hospitals**?

a) Yes		1
b) No		2

(24)

- If your answer to the above is "Yes", please indicate the extent to which the individual hospitals, within your Hospital group, participate in the decision-making processes influencing the **individual hospital**.

.....

.....

- If your answer to 24. is "No", to what extent are the individual hospitals needs, within your Hospital group, accommodated?

.....

.....

25. How does your Hospital group determine tariffs for different procedures performed?

a) National schedule of fees		1
b) Other		2

(25)

- If your answer to the above is "Other" please specify how your Hospital group determines the tariffs for different procedures.

.....

.....

26. Is your Hospital group in a position to determine whether a profit or loss is realised with each procedure performed?

a) Yes		1
b) No		2

(26)

- Regardless or your answer above, briefly describe the calculation process that leads to the profit or loss on procedures.

.....

.....

27. The current accounting system provides all of the information required for managerial decision-making.

a) Agree (or strongly agree)		1
b) Neither agree or disagree		2
c) Disagree (or strongly disagree)		3

(27)

- Please explain (motivate) your answer to the above:

.....

.....

28. How does your Hospital group determine its accommodation tariffs? (regardless of the procedures to be performed on patient)

a) Cost plus profit		1
b) Competitors tariff		2
c) Fixed tariff		3
d) Other		

(28)

- If your answer to the above is "Other" please specify how your Hospital group determines its accommodation tariffs.

.....

.....

29. What is the position that you (the respondent to this questionnaire) occupy within your Hospital group?

.....

Thank you very much for the time and effort of completing this questionnaire.

A kind reminder to please complete this questionnaire and return it before the 18 of September 2000 to:

Me C.Cunha
P.O.Box 38845
Langenhoven park
9330
Bloemfontein.

or

Fax the completed questionnaire to:
Me C.Cunha
051 - 507 3133

or

E-mail the questionnaire to: ccunha@tofs.ac.za

B. **Summary**

Increasing patient loads, more complex procedures and ever-rising costs flood the current health care sector. The cost of hospitalisation is the predominant cost factor absorbing most of the hospital resources. Research conducted since the 1980's suggest that the current costing systems employed by hospitals do not reflect timeous, accurate and relevant cost information. This situation leads to hospital management being unable to use costing information for their management purposes.

More time and effort must be spent on cost and management accounting issues, in order to allow hospital groups to accurately price their services. The most important issue that needs attention is overhead costs. No apparent and definite procedure exists to deal with overhead costs. It is not in patients' best interest if they pay more than necessary for the medical care that is provided merely because incorrect allocation of cost is applied. This will lead to an unfavourable situation where one patient subsidises another. This will be contrary to a patient's right to manage and administer his / her own medical costs.

A combination of newly developed activity-based techniques has been presented. These techniques deal with overhead cost and the allocation of overhead cost to cost items. This methodology, known as ABMA, leads to the allocation of overhead costs to cost centres, enabling more accurate costing information, supplying the accurate information that will assist management in their planning, control and decision-making functions. As ABMA is a very recent methodology, little literature is available on the subject, particularly on the management and the application of the principles of cost and management accounting in an ABMA environment.

By tracing healthcare activities and costs back to the events that generate and cause the cost, and by focusing on the process that drives cost, a more accurate measurement of financial information and performance is obtained. This, in turn, will enable the private health care sector to make necessary price changes only if these changes are justified by the information obtained from the new system.

The aim of the study is to research and analyse the situation in the private health care sector. A literature study of the methodology was completed. An empirical research project was launched on the application

of costing systems and management processes within the private health care sector. The purpose of the questionnaire was threefold: firstly to gain background information on the hospital groups, secondly to identify the cost structures currently used by the hospital groups, and finally to assess the management styles employed by the hospitals.

The completed returned questionnaires were thoroughly analysed, and conclusion to the analysis of the questionnaires is presented. Recommendations are made regarding coping with and solving of the problems identified by the private hospital groups. ABMA as an alternative cost and management system is recommended. In support of this recommendation, a scenario using ABMA methodology is presented and compared with traditional costing systems. The final recommendation is made whereby ABMA is seen as the methodology used with the view of improving planning, decision-making and control, and ultimately the whole of the management process.

Groterwordende pasiëntladings, meer komplekse prosedures en steeds stygende kostes bedreig die bestaande gesondheidsorgsektor. Die koste van hospitalisasie is die oorheersende kostefaktor wat die meeste hospitaalhulpbronne uitput. Navorsing wat sedert die 1980's gedoen is dui aan dat die bestaande kostestelsel wat deur hospitale gevolg word nie tydig, akkurate en relevante koste-inligting weerspieël nie. Hierdie situasie lei daartoe dat hospitaalbestuur nie in staat is om koste-inligting vir bestuursdoeleindes te gebruik nie.

Meer tyd en energie moet aan koste- en bestuursrekeningkunde-aangeleenthede gewy word ten einde hospitaalgroepe in staat te stel om hulle dienste akkuraat te prys. Die belangrikste aangeleentheid wat aandag moet geniet is oorhoofse kostes. Daar bestaan nie 'n duidelike en definitiewe prosedure om oorhoofse kostes aan te spreek nie. Dit is nie in die pasiënt se beste belang om meer as nodig te betaal vir die mediese sorg wat verskaf word bloot omdat die foutiewe verdeling van kostes toegepas word nie. Dit sal tot 'n ongunstige situasie lei waar een pasiënt 'n ander subsidieer. Dit sal in teenstelling wees met die pasiënt se reg om sy/haar eie mediese onkostes te bestuur en te administreer.

'n Kombinasie van nuut ontwikkelde aktiwiteitsgebaseerde tegnieke is aangebied. Hierdie tegnieke handel met oorhoofse koste en die toedeling van oorhoofse koste aan koste-items. Hierdie metodologie, wat bekend staan as aktiwiteitsgebaseerde bestuursrekeningkunde (AGBR), gee aanleiding tot die toedeling van oorhoofse kostes aan kostesentrums, wat hulle in staat stel om koste-inligting meer akkuraat te bepaal, en om akkurate inligting te voorsien wat bestuur in hulle beplanning, kontrole en besluitnemingsfunksies sal bystaan. Aangesien AGBR 'n baie onlangse metodologie is, is baie min literatuur oor hierdie onderwerp beskikbaar, veral rondom die bestuur en toepassing van koste- en bestuursrekeningkunde-beginsels in die AGBR - omgewing.

Deur gesondheidsorgaktiwiteite en – kostes terug te lei na daardie aangeleenthede / faktore wat koste genereer en veroorsaak, en deur op die proses te fokus wat koste dryf, word 'n meer akkurate meting van finansiële inligting en prestasie verkry. Dit sal op sy beurt die privaat gesondheidsorgsektor in staat stel om

die nodige prysveranderinge te maak, maar slegs indien hierdie veranderinge regverdig word deur die inligting wat van die nuwe stelsel verkry word.

Die doel van die studie is om die situasie in die privaat gesondheidsorgsektor na te vors en te ontleed. 'n Literatuurstudie van die metodologie is voltooi. 'n Empiriese navorsingsprojek is geloods rondom die toepassing van kostestelsels en bestuursprosesse binne die privaat gesondheidsorgsektor. Die doel van die vraelys was drievoudig: eerstens om agtergrondinligting te verkry rondom die hospitaalgroepe; tweedens om die kostestruktuur wat tans deur die hospitaalgroepe gebruik word, te identifiseer, en in die laaste instansie om die bestuurstyle wat deur die hospitale toegepas word, te ontleed.

Die voltooide, terugontvangde vraelyste is deeglik geanaliseer, en 'n gevolgtrekking met betrekking tot die ontleding van die vraelyste word verskaf. Aanbevelings word gemaak rondom hoe om aandag te skenk aan die probleme wat deur privaat hospitaalgroepe identifiseer word, en hoe om dit op te los. AGBR as alternatiewe koste- en bestuurstelsel word aanbeveel. Ter ondersteuning van hierdie aanbeveling word 'n scenario aangebied deur die AGBR - metodologie te gebruik en te vergelyk met tradisionele kostestelsels. Die finale aanbeveling word gemaak waar AGBR beskou word as die metodologie wat gebruik moet word met die oog op die verbetering van beplanning, besluitneming en kontrole, en uiteindelik ook die bestuursproses as geheel.

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