IMPLEMENTATION OF ACTIVITY BASED COSTING IN THE MAFIKENG PROVINCIAL HOSPITAL

By

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DECLARATION

I declare that this dissertation is my own work. It is being submitted for partial fulfilment of the requirements for the Masters Degree in Business Administration to the Potchefstroomse Universiteit vir Christelike Hoër Onderwys, Potchefstroom. It has not been submitted before for any degree or examination to any other University.

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ABSTRACT

This research study was probing the possible role that could be played by implementing activity based costing in ascertaining the patient treatment cost in Mafikeng Provincial Hospital. A continued failure of the health institutions in providing services to communities due to shortage of funds.

The primary goal of the research document was to identify cost activities and pooling them together in realistic activity cost pools. The research should be able to provide the hospital with a document in implementing activity based costing system as a tool for financial management.

A literature study was done to identify advantages and disadvantages through a thorough investigation. A description of the process involved in the design of activity based costing system was explained. In conclusion it was identified that the current operation could be modified to suite the implementation of activity based costing in determining the patient treatment cost to the hospital.

It is concluded that the current system in the hospital underestimated the patient treatment cost and recovery cost for services provided. The outcome of the research had shown that the health managers will have a better understanding of the cost related to patient treatment cost. It was concluded that this system could lead to a cost containment and redirection of scarce resources to important activities.

SAMEVATTING

Hierdie navorsing is gebaseer op die moontlike rol wat deur die implementering van aktiwiteit gebaseerde koste gespeel kan word in die behandelings koste van pasiënte te Mafikeng Provinsiale Hospitaal. 'n Tekort aan fondse lei tot 'n onvermoë deur gesondheidinrigtings om dienste aan die gemeenskap te voorsien.

Die slagpen van die navorsing was die identifisering van koste, aktiwiteite en hulle samestelling in 'n realistiese koste inset. Die navorsing moet in staat wees om die hospital meet 'n dokument te voorsien vir die implementering van 'n aktiwiteit gebaseerde koste stelsel as maatstaf vir finansiële bestuur.

Deur middle van 'n literatuur studie is die voor-en-nadele identifiseer en deeglik ondersoek. 'n Beskrywing van die proses aangaande die ontwikkeling van die aktiwiteit gebaseerde koste stelsel was uiteengesit. Die gevolgtrekking was dat die huidige werking passend gewysig kan word vir die implementering van aktiwiteit gebaseerde koste om sodoende die pasiënt behandelings koste teenoor die hospital vas te stel.

Dit is afgelei dat die aangenome sisteem by die hospital die pasiënt onderskat in die behandelings en genesings koste vir dienste voorsien. Die uitslag van hierdie navorsing toon dat die gesondheidsbestuurders 'n beter begrip van die koste verbonde aan die pasiënt behandelings koste sal hê. Ten einde, hierdie stelsel kan tot 'n koste stuiting en naseining van seldsame hulpbronne van belangrike aktiwiteite lei.

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It is not my wisdom or knowledge to complete this research project but the might of Holy Spirit and Grace of God that made it possible to complete this task.

DEDICATION

To Ditlhare, my wife,

Refilwe, my daughter and

Reaobaka my son

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CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM

1.1 INTRODUCTION

The establishment of hospitals has been for the treatment of patients that are suffering from various illnesses and any accidental incidents caused by physical harm or danger. The treatment thereof must bring satisfaction or healing of illness and any injuries sustained due to accident. This type of illnesses and accidents in the industrialised environment cause unacceptable human suffering to victims and their families.

It is the constitutional responsibility of health institutions to reduce or minimise the suffering inflicted as a result of illnesses and injuries caused by accidents in the communities.

The State must ensure that constitutional responsibility is achieved by improving health services for all inhabitants of the Republic of South Africa. Legislation's thereof is enshrined in the South African Constitution of 1996; Act 108 of 1996, under Chapter 2; Bills of Rights (RSA Constitution, 1996: 13), section27, which states in:

- paragraph 1, that everyone has the right to have access to:
  (a) Health care services, including reproductive health care;

- paragraph 3, that no one may be refused emergency medical treatment and, Section 28, which states in:

- paragraph 1, that every child has the right to:
  (b) basic health care services;
  (c) a legal practitioner assigned to the child by the state and at the state expenses.

It is evident that with the scarce resources, the government must maximise its health services. The hospital managers should therefore be responsible for making cost assessment for all medical operations at all public or community based hospitals. This, by implication, means that the health manager should be able to quantify cost for patient treatment. The extent of the cost to the hospital was however, not determined for patient per treatment.

For any service rendered there are resources utilised for this kind of natural cause. A perpetual conflict of interest arises between the service provider and the service recipient as to the quality of the services rendered.

The research will focus on the patient's treatment, improvement of service and management of costs thereof. One can only speculate that the patient's treatment is not costed appropriately that is why the service rendered to patients is deteriorating at a very alarming rate in the Mafikeng Provincial Hospital.

The service sector, which has been growing for many years, has now started to decline and many firms have gone into bankruptcy.

For the management of service firms, it is now more important than ever to have access to good information in decision-making based on activity costing systems, which have the following advantages:

- have proved to be an effective tool in giving a clear picture of the costs for producing in manufacturing firms. Therefore we believe that activity based costing also would be an effective tool in service firms for tracing costs to services produced. Activity based costing is further a helpful tool when implementing total quality thinking in service firms as it encourages management to analyse activities and determine their value to the customer.

- activity based costing is a useful decision-making framework for economic analysis of the development of new products and continual improvements of existing products.

The competition is mounting for public hospitals because the rate of emerging private clinics and hospitals is increasing with better quality services.

1.2 BACKGROUND

The deteriorating standard of health care services in the Mafikeng Provincial Hospital, has forced the Department of Health and Development Social Welfare to introduce a programme called BATHOPELE (People First) to improve their health services. This programme endeavours to study the concerns the customers perceived quality, or a quality dimension which is external, that is outside the hospital. It deals with internal quality or the hospital function in order to avoid

mistakes leading to inefficiency.

According to Grönroos, (1990 : 5) quality has to be defined broadly, otherwise a quality improvement programme will not be extensive enough. Quite often the technical specification of a service is the same as the quality of the service. Customer's total perceived quality can be divided into a technical and functional dimension. The technical dimension refers to what the customer (patient) has felt when the service process was carried out, and the functional is how he/she receives a service. The economic dimension, which indicates that an exchange between the interacting partners must conclude an outcome, which is satisfactory from the economic point of view.

If the patient does not gain a perceived value from the exchange, then he/she is mutually bound to be dissatisfied with the total perceived quality. Patient's expectations are built on patient's needs and experiences. The service firm's image is the communication between the service provider and its (customer's) patients.

It is the intention of this research to identify a method that will enable hospital/health evaluators to take activity based costing system into account when evaluating the patient treatment. Analysing treatment cost by means of the activity based costing approach could provide such a method. Activity based costing can be described as a method of measuring the cost and performance of activities and cost objects. Cost objects are the reason for performing an activity. They assign cost to activities based on their use of resources, and assigns cost to objects based on their activities. Activity based costing recognises the casual relationship of cost drivers to activities. An activity in this instance is a description of work that goes on in the organisation

and consumes resources, while a cost driver can generally be defined as an event or casual factor that influences the level and performance of activities and the resulting consumption of resources. (Glad & Becker, 1994:23)

The financial resources and nature of health measures require minimising patient's treatment cost to a manageable level, which could be determined accurately and reported regularly. With the availability of the cost drivers, it would be possible to account for the cost of the patient's treatment in the correct manner. This will ensure that health decisions are made on better information regarding the correct expenditure of illness and injury.

The manner in which costs are allocated according to Garrison and Noreen (1997: 730) has a significant impact on operating results, as well as unit costs. He also argues that the main function of any cost accounting system is to provide a reasonable accurate analysis, distribution and classification of all expenditure.

The hospital industry has a great degree of uniformity in cost accounting procedures because of the similarity in medical methods and procedures.

Currently the hospital is generalizing costs to one activity, which is a cause of problems as it suggests that average costs should be determined for each different activity in the hospital. Apparently costs are not traceable within the current operating cost accounting procedures.

The study is selected at this stage to establish working basis. This system will be fully described in chapter 3.

1.3 EXTENT OF RESEARCH

The research will investigate patient's treatment based on cost implications as an important aspect. It should identify that individual treatment differs according to illness and accident injury. The most important element to consider in the treatment of patients must have a cost influence. The parties to be considered are:

* the patients and their families;
* the hospital, and
* the socio-economic aspects.

This research project anticipates focusing on the cost of patient's treatment and administration at Mafikeng Provincial Hospital. A treatment of a patient is when any medical treatment is done through examination, investigation and accommodation as prescribed by the case.

The research is undertaken at Mafikeng Provincial Hospital in the magisterial district of Molopo. This hospital was selected, since it has a general costing system that lead itself ideally to this type of research. It is also representative of a typical provincial or general hospital in South Africa with regard to size and treatment frequency as well as the type of hospital service done.

This research project will attempt to put monetary value to the patient's treatment at the hospital. It will also purport to approximate the cost to the hospital so as result to better the service rendered. During this research the focus will attempt to determine the cost of individual patient treatment to the hospital. The

implementation of activity based costing will be used to determine the cost of individual patient's treatment in the hospital.

It will also endeavour to determine and evaluate the performance of activities. The information will be used by the budget managers interested in the influence on the cash flow of the hospital. Decision involving the taking into account costs and performance for financing of projects normally falls within the decision-making of these managers.

1.4 FORMULATING THE PROBLEM

1.4.1 Field of Research

The research in this dissertation will primarily be in the managerial cost accounting field of study. The activity based costing section of this field will in particular be researched. A research will be carried out with regard to the implementation of an activity based costing system in the administration or handling of patients in public or community hospitals. The objective of this research will endeavour and determine the cost centres of the patients in the hospital.

Implementation considerations for activity based costing system of the hospital's department for handling patients anticipate that numerous cost drivers would be identified and categorised accordingly. In order to ensure consistency all activities performed on the patients will be analysed for duration of this research.

1.4.2 Purpose of the study

It is the objective of this dissertation to implement an activity based costing system for treatment and administration of patients in a public/community hospital. The approach has to be developed in such a way that the cost drivers will be implemented and managed in a public or community hospital with similar organisation structure and costing system.

It is the desire of this research analysis to implement activity based costing for patient's treatment and administration in the public or community hospital, consequently with reduction of costs in hospital by improving the service. The aim should be to minimise cost and maximise service rendered for economic advantage of the hospital service delivery programme. Once a proper activity based system is implemented, it would be possible to determine the level of expenditure and to minimise costs on patient's treatment to improve quality of service.

1.5 RESEARCH METHOD

The research will endeavour to address critical areas in the hospital industry , with a literature review of activity based costing. The empirical investigation of this research is to identify and isolate activities and cost drivers of patient treatment through the wards: out-patients, in-patients laboratory and pharmaceutical departments.

A comparison of cost drivers will be done with current patient treatment in the hospital. The data collected from records of the hospital will be analysed to determine average cost per patient admitted and treated.

1.6 PLAN OF STUDY

The research project or study will be conducted in the following manner:

Chapter 2, a literature study of the activity based costing system will be done through libraries, books, articles and Internet.

In chapter 3, the above literature review will cover topical issues that will assist significantly in defining the actual problem and arriving at our objective.

Chapter 4 consists of methods used to identify and isolate the activities and cost drivers of patient's treatment in the Mafikeng Provincial Hospital for determining the actual patient treatment cost.

The final chapter, chapter 5 concludes the research study by evaluating and interpreting of results obtained in chapter 4, as well as the conclusion that will be reached and possible recommendations that are required for Mafikeng Provincial Hospital.

CHAPTER 2

LITERATURE STUDY REVIEW

2.1 INTRODUCTION

The effectiveness of the management of an organisation is based on the assimilated, meaningful and workable data. The accurate, relevant and correct data (cost information) enables the management to establish policy-making and organisational planning. The survival of an organisation is based on decision it makes from information that it believes to be correct. However, the incorrect, irrelevant and meaningless, unreliable cost information will render the organisational planning in a disastrous position. Cost information is used in making a wide range of operational, management and strategic decisions. Activity based costing and its place among the many new techniques and methods which management can be used to positively influence organisational fortunes (Glad & Becker, 1994: 1). The use of activity based costing should not be seen as a panacea for all organisational problems, but as one of the critical tools in a holism of approaches which management may require in order to manage organisational affairs (Glad & Becker, 1994: 1).

Incorrect cost information can put any organisation on a crisis course from which it may never recover. The company/organisation with misleading cost information will not be able to be competitive in the changing and competitive environment.

Moreover, the total organisational competitive edge will not be strategic to compete with other competitors. One of the keyways companies develop competitive

advantages is to become a low-cost producer or seller (Maher & Deakin; 1994: 260).

It is pointed out that certain companies have learned to use the information they gained from the cost systems to make substantial price cuts to increase market share (Callon,1996 : 279).

According to Hilton (1994: 15) many companies are moving away from a historic cost accounting perspective towards a proactive cost management perspective. He continues by identifying that the cost management system places an emphasis on activities. Garrison and Noreen (1994: 18) stress the idea that cost management goes beyond the mere accumulation and reporting of costs. Activity based costing offers an approach which has the potential to overcome many of the problems which have been associated with the operations of costing systems in modern environments. (Innes & Mitchell; 1991: 62). The research project has identified the implementation of activity based costing system, to endeavour determining the cost per patient's treatment in the Mafikeng Provincial Hospital.

A literature study of activity based costing is done, executed, etc with the prime objective of assessing the distinguishing facts between activity based costing and the traditional costing system. An activity based cost model and management will be investigated.

This will be followed by a description of the process involved in the design of an activity based costing system. An overview of the application of the activity based costing to medical health service in determining the cost per patient's treatment at a

given time.

2.2 THE DIFFERENCES BETWEEN TRADITIONAL AND ACTIVITY BASED COSTING SYSTEMS

The essential purpose of any costing system is to accumulate costs information for management use. Costing systems are information systems; that require a specific type of input such as direct labour, direct material and units produced to be of value.

It is from the input data that service costs and other information is determined according to the specific costing system's defined methodology. The results obtained would depend on the costing system used since the same input data could be used in different ways.

The historical cost accounting systems can be regarded as an appropriate method for the era and the environment in which they were applied namely proportionately high direct labour inputs; limited, simple product lines; low overheads, relatively expensive recording and processing data (Glad & Becker, 1994: 5).

Traditional accounting emphasizes indirect costs on analysis and control of manufacturing overhead (Hammer, 1994: 364). They continued to argue that activity based costing examines another way of using information about indirect cost, called activity accounting. Traditional product costing traces only direct material and direct labour to each unit of output.

In contrast, activity based costing recognises that many other costs are in fact traceable not units outputs but activities required to produce output (Hammer, 1994: 365). The nature and variety of activity drivers is what distinguishes activity based costing from traditional costing.

A costing system should provide information that will assist the management to identify slacks and improvements. The costing system should be economically effective for usage within the organisation.

2.2.1 The traditional costing systems

The traditional costing systems utilise a single, volume-based cost driver. The hospital is currently employing this system whereby all costs are either medical or pharmaceutical and all bulked under the cost centre of stores department. Thus, the service costing system distorts the cost of service accordingly. In most cases the historical accounting systems applied overhead costs to services on the basis of high direct labour inputs. The traditional cost system gives an inappropriate product or service cost (Glad Becker, 1994: 5).

The traditional costing show product costs as the sum of direct material, direct labour and applied overhead based on labour or some other volume measures. The best traditional system can do is to accurately capture the costs of unit level activities, but it then distorts them by allocating batch level cost and product level cost and unit level allocation bases.

It is a general assumption that a cost is incurred in any service or product manufactured. This assumption holds water for certain direct costs. Furthermore, it does not apply to activities, which are not directly performed on the service or product.

It is of the opinion that traditional cost accounting model employs a volume-based driver, such as direct labour hours or machine hours for assignment of manufacturing overhead costs. It continues that the conventional cost accounting model ends up with cost of goods sold on absorption costing and only product cost as defined in the financial accounting (Garrison & Noreen, 1997: 326).

Primarily, traditional costing system allocates cost directly to product or service, rather than to activities and then from the activities to service or product units. This system reports on cost incurred, and not why and how it was spent.

The separation of traceable and fixed cost is crucial when doing segmented reporting of costs. It is important, since traceable fixed costs are recorded to the departments while fixed cost are pooled in the traditional costing system approach. The guideline they suggested for using the traditional approach is to use a general guideline in determining which costs are traceable. This approach has obvious inherent inaccuracies (Horngren & Foster, 1991: 532). The traditional approach to costing of products is primarily a system whereby total costs to produce a service are divided amongst the various products.

By making use of the traditional costing system, therefore means that all costs have to be allocated to one or other services.

These and other have led to many commentators questioning the validity and applicability of traditional costing systems in the modern business environment. A lack of essential innovation in the field of cost and management accounting has led to a situation whereby this supposed management tool to meet inherent demands by the changed environment (Glad & Becker, 1994: 9).

2.2.2 **Activity based costing**

It is evident that activity based costing is entirely different from the conventional costing system. The latter assumes that products or services cause costs. However, activity based costing systems have activities as the primary cost objects. Activity based costing also assumes that activities cause costs and that cost objects create the demand for activities.

Garrison and Noreen (1997:18) state that an activity is any event or transaction that is a cost-driver, acts as a casual factor in the incurrence of cost in an organisation. They continued by arguing that activity based costing is sometimes referred to as transactions costing.

The importance of this costing method improves the traceability of the overhead costs and this result in more accurate unit cost data for management (Garrison & Noreen, 1997:183).

Maher and Deakin (1994: 259) emphasise that the prime objective of activity based costing is based on the premise that products consume activities; and activities consume resources. Activity based costing involves the following three steps:

- identify the activities that consume resources, and assign costs to those activities;

- complete a cost rate per cost driver unit. A cost driver is a factor that causes or "drives" activity costs; and

- assign costs to products by multiplying the cost driver rate times the volume cost driver consumed by the product.

Glad and Becker (1994: 9) stated that one of the important paradigm shifts in cost accounting has been the utilisation of the factor which influences cost, namely the cost driver, to determine product or service cost and to serve as a mechanism for managing costs.

Activity accounting can give insights into how to improve competitiveness by managing resources more efficiently, and it is an important tool for achieving continuous improvement (Hammer, 1994: 364).

Activity based costing is a different approach and improves control of overheads by cost/cause relationship, that is activity and cost. The system is flexible to relate costs to consumers, processors, management responsibility and not just products or services.

In practice activity based costing systems use many drivers as allocation bases in the second stage of cost allocation system whereas the traditional cost system tend to use, at the most, two second–stage allocation bases (Drury, 1995: 277). Firstly, costs are accumulated by function or department and thereafter are assigned or traced to products through a single activity measure. To reiterate activity based costing focuses on resources and activities as cost generating and traditional focuses on products as cost generating.

Activity based costing model is consumption rather than spending. This assumption's implication is perhaps the most important. For costs to decrease there must be change in spending. However, activity based costing does not measure spending, it measures consumption. There are wide arrays of activities that can be identified and measured. These activities serve as linkages between costs of resources and cost objects. The linkage enable multiple cost pools rather than a single cost pool to be used relating a cause and effect relationship. Pools are homogenous which means that for each cost pools are variable (strictly proportional to activity).

Garrison and Noreen (1997: 183) stated that activity based costing would reduce the problem of cost distortion by creating a cost pool for each activity or transaction that will be identified as the cost driver. Furthermore, by assigning overhead cost to products or jobs on a basis of the number of separate activities they require in their completion.

Performance improvement techniques should also include cost driver analysis, activity grouping, performance evaluation and activity based. Garrison and Noreen (1997: 93) defined cost driver as a measure of activity, and cost driver should not be misinterpreted as an output measure.

It is the output measure that should be related to the cost object. Hammer (1994: 380) argues that activity based costing recognises that many other costs are in fact traceable not to units of output, but to the activities required to produce output.

When this information is available to management, it usually reveals opportunities for improvement. Thus, the management has four ways in which activities can be managed to achieve improvement in a process and these are:

(i) activity reduction, reducing the time or effort required to perform the activity;
(ii) activity elimination, eliminating the activity entirely;
(iii) activity selection: selecting the low-cost alternative from a set of design alternatives; and
(iv) activity sharing: making changes that permit the sharing of activities with other products to yield economics of scale.

The contribution of activity based costing is that it measures the cost of set-ups and every other significant activity, making it clear where improvement

efforts should be devoted first. The most costly activities represent the most urgent problems and biggest opportunities for improvement. Activity based costing provides information that prioritises the possible improvements. A final area in which activity-based information is useful to management is in controlling cost (Hammer; 1994: 381).

The importance of the correct activity classification is underlined by Hammer (1994: 382) in his statement that activity classification should always include some kind of value-added or non value-added analysis, and more importantly all staff involved in classifying activities should understand these definitions. One of the definitions of a non-value added activity is anything that can be eliminated without detriment to the final product. By identifying the high costs of non-value added activities, activity accounting plays an important role in total quality management. It is only a tool to help with performance management.

Activity based costing is a management process that examines how entity's activities consume resources and relate to its outputs. Activity based costing is an approach used to breakdown an organisation's processes into activities, and measures each activity's cost and performance effectiveness. This is accomplished by assigning costs to objects, such as products and customers, based on use of activities. The costs that cannot be directly traced to activities or outputs are then assigned to outputs based on a cause and effect relationship or through cost assignment.

Many private and several sector entities that have implemented activity based costing have chosen to designate activities as either value added or non-value activities. Value added activities are those activities that cannot be excluded without negatively affecting the quality of the output.

Non-value added activities could be excluded without affecting the quality of the output. Resources costs are assigned to activities and activity costs are assigned to outputs.

Activity based costing system enables management to:

- improve product or service costing, because all costs are reviewed to ensure proper assignment to cost objectives;

- see how activities correlate to one another and to outputs;

- identify the full costs of performing and non-performing activities and outputs;

- analyse value added and non-value-added activities as an option;

- institute performance measures and gauge actual performance against these measurements; and

- require a cross-functional look at resource consumption.

2.2.3 The difference between activity based and traditional costing system

It is vividly clear that there is a great degree of difference between activity based costing and traditional costing system, the primary difference is based on the treatment of non-volume related to overhead costs. Drury (1995: 275) emphasised that activity based costing simply recognises that businesses must understand the factors related to activities and various support activities. He felt that the latter activities such as ordering, receiving, materials handling, parts administration, production scheduling, packing and despatching should be included when activity costing analysis is utilised.

The traditional costing system assumes that products consume all resources in proportion to their production volumes, however, many organisational resources exist for activities that are unrelated to physical volume.

The traditional cost accounting model employs a volume based labour driver hours for allocation of all production overhead costs, while activity based costing model allocates unit-batch and product-level costs to output (Hammer, 1994: 365-6).

Drury (1995: 70) argues that the traditional cost accounting model concludes with a cost of goods sold based on absorption costing and adds only product costs as defined in financial accounting. While the activity based model concentrates on managerial decision making producing cost that span the boundary between manufacturing and non manufacturing activities and focuses on the tracing of cost drivers (Drury, 1995: 86).

In practice the activity based costing system uses many drivers as allocation bases in the second stage of the cost allocation system whereas the traditional costing system tend to use the most, two second-stage allocation bases (Drury, 1995:277).

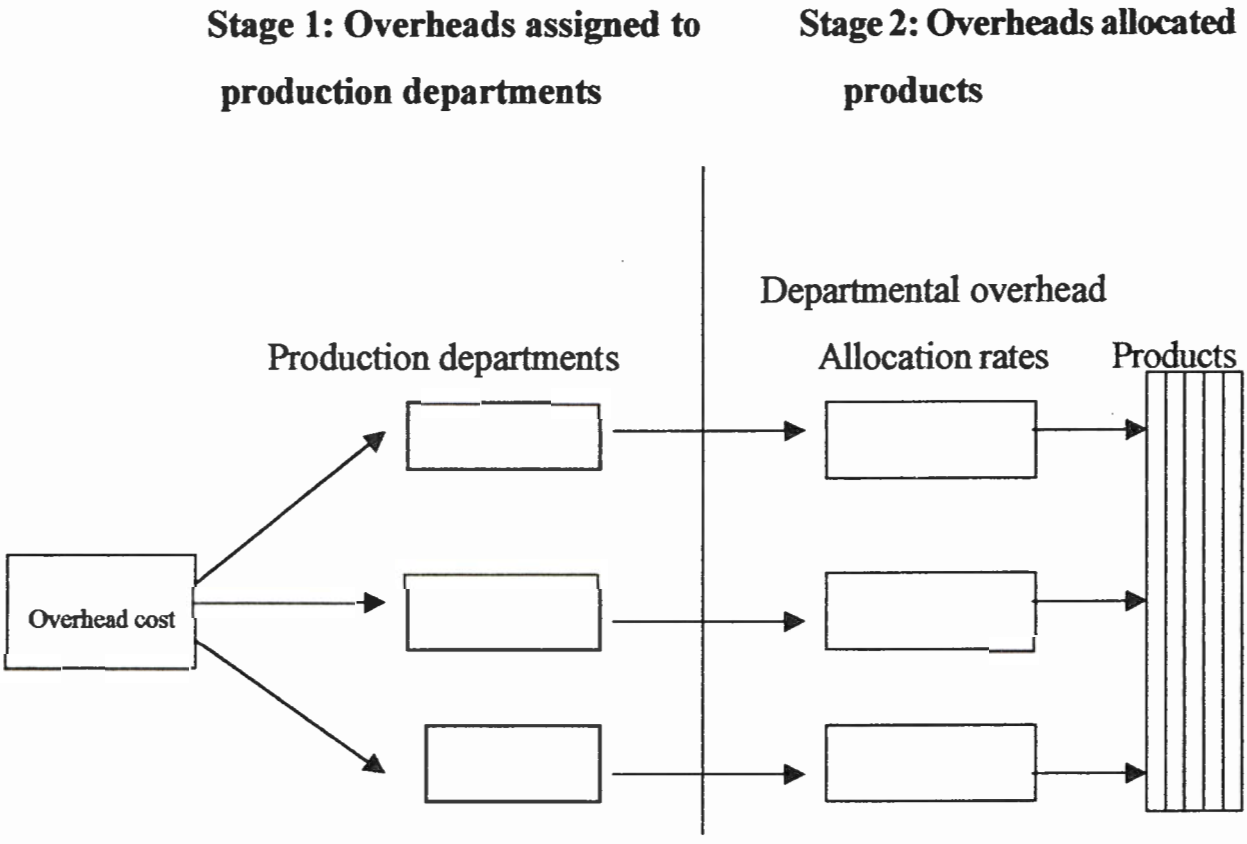
Overhead costs are pooled in both cases and attach the accumulated overhead cost to the product lines. The different costs are pooled in both cases and then a series of cost rates are used for the activity based costing which is based upon combining overhead into a variety of activity based cost centers that are directly coupled to outputs via a sequence of cost drivers (Innes & Mitchell, 1991: 20).

In contrast to this, direct labour hours are utilised to allocate overheads in the traditional costing system, which causes inaccuracies in product lines when utilising the traditional costing system.

The above are illustrated by diagrams below:

Figure 2.1

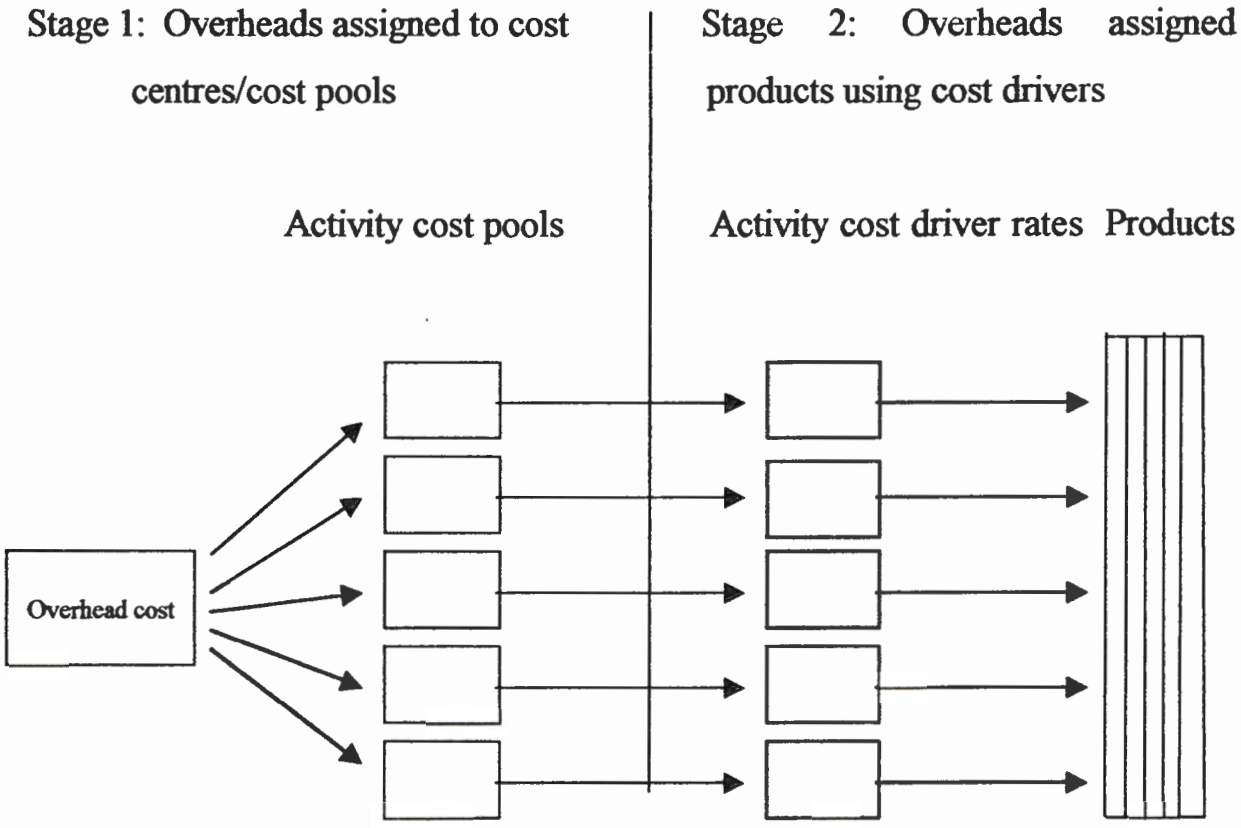
Traditional costing system



Source: [(Adapted from Innes and Mitchell(1990)](Drury, 1995:278)

Figure 2.2

Activity based costing system



Source: [Adapted from Innes and Mitchell (1990).](Drury, 1995:278)

Although there is a similarity in both traditional and activity based costing systems, there is distinctly a greater degree of refinement in the way costs are grouped under the activity based costing approach. They carry on by stating that the activity based costing provides a favourable environment for cost pool of homogeneity and cause/effect relationship between absorption bases and costs.

Traditional costing system uses indirect cost application based which are often financial, such as direct labour costs or direct material cost. Activity based accounting systems that apply indirect cost application bases which are often non financial variables, such as number of parts in a product or hours of test-time (Horngren & Foster, 1991: 157). They continue by saying most fundamentally that executives manage costs by overseeing activities rather than products.

The pooling of costs by activities or activity area provides information that may help managers to better plan and control costs through the chain of business functions, from research and development to customer service.

2.3 THE ACTIVITY BASED COSTING MODEL

Activity based accounting focuses on activities as the fundamental costs objects and uses the cost of these activities as building blocks for compiling the cost of other cost objects (Horngren & Foster, 1991: 159).

An activity based costing system deals with the accumulation of the costs of an organisation's significant activities as well as assigning products or services in accordance with how the activities are used in the production of those products and services (Garrison & Noreen, 1997: 91).

The principle adopted under activity based costing is based on the knowledge for the activities, which causes the consumption and application of resources. Furthermore, the success of the activity based costing is to differentiate cost and non-financial data.

The primary objective of activity based costing is to trace the activities in order to focus the attention on why resources were consumed. Innes (1995: 50) is of the opinion that in an organisation using activity based costing approach the cost management purpose has replaced the product costing purpose as the primary use of activity based costing.

The application of activity based costing approach yields activity performance measurement, decision making and budgeting application.

An analysis of activity based costing provides the use of two-dimensional model (Garrison & Noreen 1997: 183). They used the model to explain the components involved for the flow of information in the activity based costing system. Note that information in such a system can be viewed from two perspectives. The one view being the cost view and the other the process view.

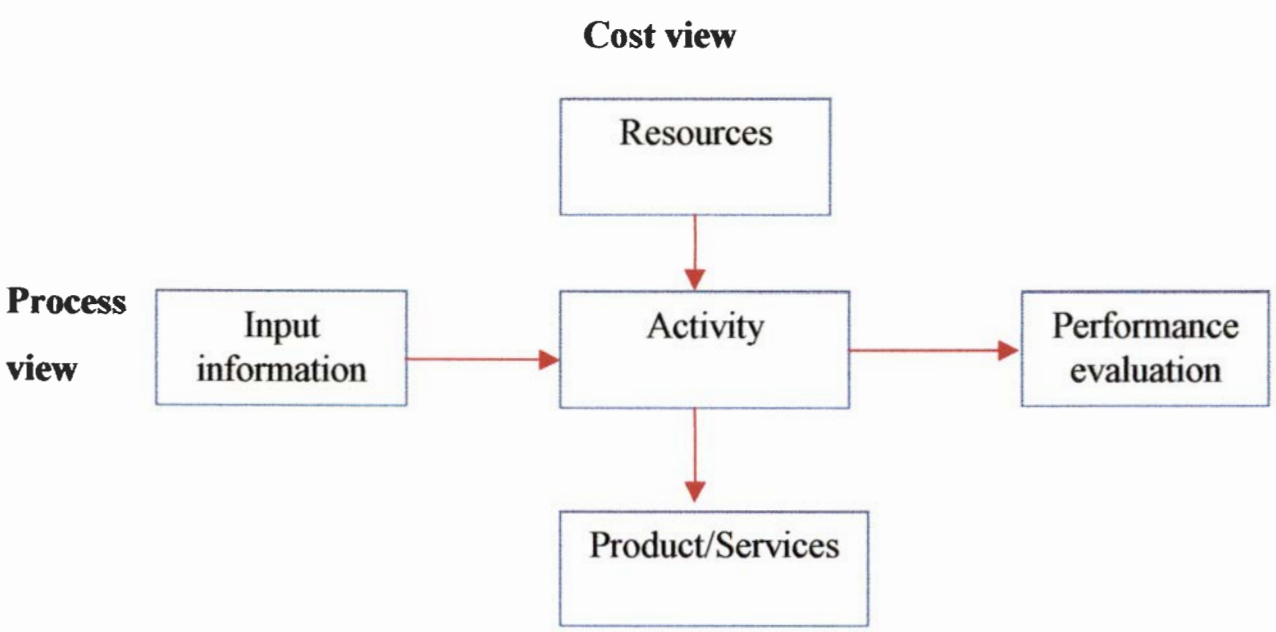
2.3.1 **The cost view**

The cost view in the model shows the flow of costs from resources to activities and from activities to products and services as shown in figure 2.3 on page 28. The resources consumed by moving materials around plant will be traced to particular products based on some observed activity. This cost view in this model summarizes the key concept underlying activity based costing: ***resources are consumed by activities, and products and services consume activities.***

It is evident that the cost information collated will assist in the decision making for product or service pricing, product or service design as well as determining the innovation of the product or service.

The flow of costs indicate clearly the basic principle of activity accounting that the cost objects cause the need for activities, and activities cause the need for resources. The cost information flow ensures an accurate product or service cost in terms of the assumption of activity based costing system. Activity based costing system ensures that significant activities are identified and cost allocated to them. The relationship between cost objects and activities, makes the management knowledgeable and understanding the consumption of resources. The cost flow is shown in figure 2.3 below:

Figure 2.3 : Activity based costing model



Source: (Garrison and Noreen, 1997:183)

With reference to figure 2.3 above, process view present the cost model which shows the flow of input information, which would be the observed transactions associated with an activity (Garrison & Noreen, 1997: 191).

This gathered information provides the activity data needed to complete the costing of products or services, and it also provides data needed for performance evaluation, as depicted in figure 2.3 that is the horizontal flow in the model.

The process view includes information about cost drivers and performance measures for each activity or process in the value chain. These cost drivers and performance measures are essentially non-financial.

The data collected provides useful information needed for the performance evaluation. Performance measures describe the performance management considered more useful than pure financial evaluation to evaluate overall organisation performance. The principal reason must be met in order to service customers satisfactorily (Glad & Becker, 1994: 21).

Performance measurement describes the work done and the results achieved in an activity. They describe how an activity had performed to meet the customers' needs and the company/organisation. Performance measures include measurements of efficiency, lead-time and output quality of service provided. It is said that activity based costing process view provides operational intelligence about the workings of the organisation. It gives an organisation a competitive edge about the environment within which it operates. In other words, information regarding outside factors that determines how frequently an activity is performed as well as the attempt necessary

to perform the activity. Operational intelligence contains information about the performance of an activity (Garrison & Noreen, 1997 : 183).

2.4 DESIGN OF AN ACTIVITY BASED COSTING SYSTEM

The building block of an activity based costing system is the analysis of activities. In order to identify the following: the activities within each department why and under what circumstances each activity is done, how often, and for whom, the activity is performed; resources consumed in doing the activity; and what factors determine or "drive" the activity or resource. The managers must take time to understand the operational and economic structure of their business and then analyse the ways in which resources are consumed by activities and what the outputs of those activities are. This became the basis for changing the way the organisation operates.

Activity based costing system attempts to combine the financial and non-financial data for management decision. However, the design of an activity based costing system is to remember that the objectives should be met at a minimum cost and complexity. The successfulness of the activity costing system will be judged by the information provided to management, which will be evaluated against the competitiveness and effectiveness thereof.

Activity based costing has been defined as a method recognising the casual relationship of cost drivers and performance of process related activities and cost objects.

Managers may often focus on precision and ignore how accurate the data is. This can lead to the erroneous assumption by managers that information is more exact than it really is.

Holmen (1995: 38) enumerated the following assumptions underlying the design of an activity based costing system:

- activities consumes resources;
- products or customers consume activities;
- model is consumption rather than spending;
- resources consumed have numerous causes;
- activities of wide array can be identified and measured;
- cost pools are homogeneous; and
- costs in each pool are variable (strictly proportional to activity).

Coburn (1995: 57-59) identifies the following steps in the introduction of an activity based costing:

Step 1: Identify major activities;

Step 2: Establish major resource pools;

Step 3: Collected cost driver information, assigned costs to each activity and calculated cost per outcome;

Step 4: Analysed process with costs, outcomes and benchmarks; and

Step 5: Identified additional improvement for opportunities.

The introduction of activity based costing system is essential to combine it with practical business operations. Marshall (1995: 28) stated that the elected function should be profitability management which will provide an ideal pilot area for learning about activity based costing whilst, at the same time furthering company understanding about the relationship between product turnover and customer dividends.

Garrison and Noreen (1997: 192) suggest that different methods can be followed in designing activity based costing system. Albeit, those proposed methods they recommended that the following steps be followed:

2.4.1 **Process value analysis**

Garrison and Noreen (1997: 183) concludes that the first step involved in the design of activity based costing is to do a process value analysis. Process value analysis consists of systematically analysing the activities required to make a product or perform a service.

The approach provides a mechanism on where resource utilisation could be improved. It is imperative that the first stage is to identify the primary activities in the organisation. Furthermore, to match the details of the activities for the purpose of the final costing model.

Glad and Becker (1994: 28) carries that process value analysis refers to the identification and analysis of the major process of business.

The processes are subdivided into activities, and by analysing the activities in each process, the opportunities for improving the organisation and reducing cost become identifiable inter alia by distinguishing between value-added and non-value added activities.

The subject of the research placed more emphasis on the smooth management of core business processes, most of which involve cross - functional inputs and co-operation (Kotler, 1994: 44).

The activity based costing system will enable Mafikeng Provincial Hospital management to have better and accurate management information of cost for sound decision-making.

Thus, the value chain plays an important role for the company because it acts as tool for identifying ways to create more customer value. Every firm is a collection of activities that are performed to design, produce, market, deliver and support its product (Kotler, 1994: 43).

2.4.2 **Identifying activity centres**

After a process value analysis has been completed the next step is to identify activity centres. An activity centre can be defined as a part of the production process for which management wants a separate reporting of the cost of the

activity involved. In activity based costing system the primary element is activities. The next step is the assignment of cost of various activity pools and then assign these costs to products or services.

Garrison and Noreen (1997: 185) argue that it would not be economically feasible to treat every single activity as a separate activity centre. It is better to integrate several innovated activities into one cost centre; so as to reduce the amount of detail and record keeping with cost involved.

The result of activity combination is to improve the correctness of product or service costs; the actual improvement is the capability, first to query the presence of activities and associated costs and, second to begin measuring activity achievement.

An activity based costing system assigns costs to products or customers in two stages. In the first stage, they are assigned to activities, and in the second stage costs are allocated from activities to products or customers with the use of cost drivers. This principle should be borne in mind when creating activity centres during the design of the system (Glad & Becker, 1994: 36).

Garrison and Noreen (1997: 185) state that the greatest accuracy in costing is achieved by recognising four general levels of activities, with varieties of these levels subdivided into specific activity centres.

Factors that could affect cost behaviour include mass, quantities, decisions, policies, (Glad & Becker, 1994: 121) movement and volume. These factors

could be grouped into the following levels of variability:

- **unit level activities**

A unit level activity is activity performed on units of products. It varies in proportion to the amount of units that is directly related to direct labour, material, machine hours and energy.

- **batch-level activities**

Batch activities are performed on batch of products rather than individual product units. Activity drives for this type is dependent on the number of units produced

- **product-level activities**

Product level activities benefit all units of a particular product. Activity drivers for this type can be the numbers of machine set-ups to produce a batch of products or engineering change notices. The expenses of these activities are independent of how many batches or units are produced, and

- **facility-level activities**

Facility activities sustain a facility's general process. Facility level costs include items described as general overheads. This may include

insurance and management costs not attributable to any of the mentioned levels for activities.

It is imperative to isolate the various levels of activities for achieving the greatest benefit from the introduction of activity based costing system.

2.4.3 Defining resource drivers/stage one cost driver

The designing process of an activity based costing defines the resource drivers. Their primary objective is to relate the resource consumption. Most accounting systems are set up with a multiplicity of accounts to classify information for various reasons (Glad & Becker, 1994: 123). This categorisation is necessary for control purposes, but normally at organisation and not at activity level.

The resource driver therefore describes relationship between the cost element and activity, or how the activity consumes the cost element.

The definition of resource drivers carries important elements, which include the collection of relevant resource driver data to cost driver and measures actual consumption by products (Garrison & Noreen, 1997: 188).

This simple relationship is not only useful in understanding the cost relationship but equally so in planning and restructuring the activities

or processes of an organisation. The activity based costing approach reveals that cost collection is done in various processes for which costs are easy to be pooled.

More significantly is the observation that completed products or services are directed through different sub-processes, depending on the type and complexity of the manufacturing process.

The activity based costing approach results in two major advantages. Firstly, it assigns costs from activity pools to products, which can be done in more differentiated and concentrated way. Secondly, the activities can be measured and targeted for innovation. It is therefore crucial to remember that cost should be traced wherever possible and only allocated in the final stages.

2.4.4 Identifying activity drivers/stage two cost driver

Products consume activities and the stage two cost drivers describe this relationship. The relationship is important for cost management purposes as the understanding and management of the cost driver should help to manage activity costs down.

An activity driver is the factor that measures the activity consumption of cost object. A cost object is generally defined as the reason for carrying out activity.

Mecimore and Bell (1995: 22-24) define the first generation of activity based costing as follows:

First generation activity based costing emphasized product costing, with major output for better product-costing accounting system. A major contribution of the first generation activity based costing system was the recognition that cost drivers might encompass more than one of an organisation.

For the first time, cost drivers were separated into volume and transaction cost drivers. Such separation influenced the calculated product costs significantly and caused a shift in many companies product mix. Activity based costing analysis showed that low-volume products with substantial transaction costs were unprofitable.

For perhaps the first time, attention was directed toward managing cost drivers as a way to manage or control costs. Costs were divided into value-added and non-value added components, with cost drivers separated into volume related and transaction related categories. Companies recognised implicitly that not all cost drivers are volume related and that sometimes drivers associated with transactions have a greater cost than do the cost driver associated with volume.
Attention is focussed on the management of cost drivers as a vehicle for managing costs.

Product cost is still the primary focus, for managing cost drivers rather than cost control through variance analysis.

Matching the level of the activity driver with the activity does not always ensure that the desired level of accuracy is achieved. The answer is to be found in the correlation between the performance of the activity and the activity driver

2.5 THE COMPATIBILITY OF ACTIVITY BASED COSTING SYSTEM IN THE HOSPITAL INDUSTRY

The activity based costing system is solely engaged in ensuring that all costs incurred for an activity are properly allocated, thus resulting in an accurate product or service costing. The primary intention is to minimise costs and maximise services or products. Activity based costing system will enable the hospital management to:

* improve product costing, because all costs are reviewed to ensure proper assignment to cost objectives;
* see how activities correlate to one another and to outputs;
* identify the full cost of performing and non-performing activities and outputs;
* analyse value added and non-value-added activities as an option;
* institute performance measures and change actual performance against these measurements; and
* require a cross-functional work at resource consumption.

The method is identified to isolate the cost of patient's treatment in the hospital.

Whenever the cost of treatment is known, it would be possible to do cost benefits analysis for the advantage or disadvantage during the analysis procedure.

2.6 SUMMARY

The activity based costing system is the technique developed to improve the costing in different industries and thus science it attempts to correct the wrongs by applying methods and techniques for improvement of the management accounting systems. It emphasizes the cost reduction, process improvement, re-engineering and performance management.

(Mecimore & Bell, 1995:26) state that the three generations of activity based costing system supplement and complement each other, and one system should not be considered the replacement of either of the two. The first generation focuses on product costing, the second on process costing or performance evaluation, and the third on value chain costing to be used in strategic analysis. All three uses the same activities database, differences lie in types of linkage and extent to which data on activities are to be gathered.

The reason activity based costing produces such significant results, is that it changes the culture of the organisation.

If a company's priority is to make cost conscious decisions and eliminate inefficiencies and unprofitable activities, then all employees must be given the tools to work towards that objective.

Activity based costing provides visibility to information that was previously hidden in a traditional accounting system. With the right data and corporate culture, employees will have the means and the incentive to work towards eliminating excess costs and to work towards achieving the most affordable product possible.

Implementation of a managerial cost accounting process requires support from all layers in an organisation.

The following are isolated for success of activity based costing system:

* **gaining a working knowledge of management cost accounting and its benefits.**

A working knowledge of management cost accounting and its benefits will greatly enhance employee's ability to successfully market management cost accounting;

Planning, training and technical assistance from experienced specialists, whether internal or external can ensure that employee will be well versed on management cost accounting;

* **understanding the work environment**

This includes the need to understand the internal and external issues and drivers to take forward an activity based management programme in unique circumstances of particular organisation;

* **commitment and communication**

Gaining full support and commitment from senior management may be the single most important element in implementing activity based costing system. It should be borne in mind that activity based costing system is a management task. It is a tool and not an end-all solution to managerial problems. It does, however, form a new basis for a fundamentally different way of managing the organisation;

* **software and system**

Cost accounting software itself should not be the primary focus, but should be viewed as a facilitator for accumulating data and making it readily available software which automates many time-consuming steps involved in implementing and using data.

A good activity based costing system process will greatly enhance the distribution of completed cost/process data accumulation and analysis; however, a great activity based costing process will not improve weak cost/process data accumulation and analysis.

Moreover, activity based costing leads to better control, since managers can see that the best way to control costs is to control activities that generate the costs in the first place (Garrison & Noreen, 1997: 197).

Successful implementation of activity based costing depends on identifying the key activities that generate costs and being able to track down how many of those activities that are performed for each service that is provided (Garrison & Noreen, 1997:199). However, managers tend to be more concerned about costs reduction and working towards specific long-term organisation goals that they are about obtaining more accurate products costs.

CHAPTER 3

BACKGROUND TO THE RESEARCH AND THE SPECIFIC ENVIRONMENT IN WHICH THE RESEARCH IS CONDUCTED.

3.1 INTRODUCTION

A hospital is a place where people who are ill undergo tests and receive treatment. Hospitals are a convenient way of bringing together in one place all specialised equipment's and highly trained medical staff needed to care for patients whose illness is too severe to be treated at home by their family doctor.

A modern general hospital has administrators and managers. It is staffed by doctors, physicians, and surgeons of different specialities. Admission and medical record staff see to the records and forms needed for each patient.

Nurses care for the patients. The pharmacy supplies medicines. Porters, orderlies, kitchen staff, cleaners, electricians, engineers, carpenters, decorators, security personnel, and a host of others take care of patients in other ways and look after the buildings and the equipment. Ambulance men and women transport patients outside the hospital. Many of these services must be on 24-hour alert since people can become ill and accidents occur at any time. Paying for all these people and services is a costly business. The money is raised in different ways.

In South Africa the money for provincial hospitals comes from taxpayers. The issue of how medical care should be provided and paid for is much discussed in the supreme law of the country (RSA Constitution, 1996: 3).

Mainly health care is subsidised by the State, mostly out of taxes collected. In this chapter, the background to the research, as well as the specific environment in which the research is conducted will be discussed. This will put the reader in a position to be able to understand the activities within the hospital concerning the patient treatment. All activities will be discussed with specific reference to acute patients. Consequently, an overview will be discussed on the existing costing system in use in the hospital.

3.2 AN OVERVIEW OF HOSPITAL RELATED BACKGROUND INFORMATION AND COSTING, AND ITS VARIOUS ASSOCIATED ACTIVITIES.

It has been identified that the hospital costing or pricing to service rendered does not have any relation to activities. It is imperative to explain activities in the hospital for laying a basic understanding for patient treatment administration in Mafikeng Provincial Hospital.

3.2.1 Out-patient treatment

The department deals with people coming to the hospital for just a time for a test or examination by a general practitioner or specialist.

Basically, patients are referred to the hospital by peripheral clinics and family doctors.

The following are the activities performed by the department:

(i) Pre-examination by professional nurse consultation

Nurses are checking the vital signs, temperature, pulse, respiration, blood pressure and urine test. Recording of the patient's complaint history.

(ii) General practitioner consultation

The general practitioner performs medical examination as per given report or history of the patient. The following might be the doctor's direction for the patient treatment.

- Ordering of medication as per prescription from Pharmaceutical department or pharmacy;

- Ordering further investigations on X-rays, blood tests, ESG etc; and

- Admission for a further observation.

It is eminent that the consulting doctor determines whether the patient can be treated as an out-patient or in-patient.

3.2.2 **In-patient treatment**

In-patients are people admitted to the hospital who stay at least overnight or a number of days. They are looked after in wards. In most hospitals wards are divided into two main groups: medical and surgical, although the distinction is not always clear.

(i) **medical wards**

Patients in the medical wards are being treated mainly by the use of drugs and other means, although at times special surgery may be needed.

(ii) **surgical wards**

Generally, patients in surgical wards are undergoing some kind of general surgery, often to the abdomen and chest.

(iii) **speciality wards**

- General surgical: often dealing mainly with intestinal and abdominal problems;
- Orthopaedic: deals with bones and joints matters;
- Obstetric: involves pregnancy and childbirth;

- Paediatric: division - concerning children;

- Gynaecological: it involves female reproductive organs; and

- Men's surgical: deals with male urinary and reproductive organs.

There are many advantages in having all those specialities in one hospital. Seriously ill patients can receive care from experts in different fields of medicine. Expensive equipments such as X-ray machine, CAT scanners, and heart-lung machines are available at once to any patients who may need them. Forms, notes and medical records are centralised. However, in this hospital these records are not kept in the hospital, patients keep their own records.

(iv) **obstetric (maternity) ward**

In this hospital the obstetric ward is divided into four divisions. Patients are treated for a minimum of two days and a maximum of five days. Patient treatment includes continuous medication under observation of the midwives and the doctor. The sub-wards are as follows:

- **antenatal**

Antenatal wards treat sick pregnant mothers with different problems with maximum of three days treatment. Pregnant mother with false labour pains is discharged after three days.

The common complications are:

- elevated blood pressure which need continuous blood pressure treatment from the time it was discovered until post deliver;
- polyhydraneous problems;
- intra uterine deaths;
- asthmatic patients;
- diabetics;
- bad obstetrical history cases;- Caesarean patients with second pregnancy are treated, as from the 34th week of their pregnancy to induce labour for avoiding complications.

- **Labour ward**

Patients are admitted an hour post delivery. The treatment starts from as if the patient is not a booked case .The following is done to determine the condition of the patient:

- RH, WR, Full blood count to determine/investigate infection and the blood constituency of the patient;

- Blood transfusion if the patient had overbled;

- Provision of pads;

- Napkins for the baby; and

- Continued antenatal treatment.

- **Slow progress labour (1st stage of labour)**
  - Oxygen is provided;
  - Drugs provided to relax muscles; and
  - Caesareans referred to operating theatre.

- **Prolonged 2nd stage of labour**
  - Forceps;
  - Vacuum, drug provided (Pitocin); and
  - Affected new babies after complicated labour are transferred to neonatal ward.

© **Peuperium (postnatal) ward**

Patients in this ward can stay for a period of 5 days to 4 weeks depending on the condition of the patient's health. It is the most expensive ward for caring of patients, because they are put on drugs. Profelitically treatment is to relief pain with Schedule 7 of drug (substance abuse) like;

- **Peuperical psychosis**

Mothers who are badly affected by the labour pains are treated with psychiatric treatment for 14 days and the care continues for a month. If there is no improvement the patient is classified as a psychiatric case.

(d) **Neonatal ward**

The sub-ward deals strictly with new babies: pre-term, sick babies and infected babies, and haemoragic disorder babies.

(v) **Operating theatre**

Operating theatre ward is most complicated and specialised ward which need extreme management controls. The most crucial factor is lead-time and planning.

- **Pre-operative visit**

Theatre nurses consult the patient prior to the operation for preparing him/her psychologically in the ward.

- **Preparation for theatre operation**

  - Drug for anaesthetic;
  - Boyl's Machine which control all gases like oxygen and nitrogen oxide;
  - Operating table with all its attachments;
  - Solution to clean switchers, material, blaze and other instruments;
  - Sterilised linen and gowns; and
  - Mask and caps.

- **Operating team**

  - Anaesthetic surgeon;
  - Surgeon and his/her assistant;
  - Circulating nurse for checking of material and instruments; and
  - Supervisors nurse for co-ordinating the operation function.

The operation process takes place from 45 minutes to 3 hours depending on the type of the operation. Records are maintained in order to control process for each and every operation. Thus, activities can be identified and isolated. Then to the complexity of the operation process the hospital management had determined the following tariffs: -

  - Operating fee (up-front) = R479, 00 per operation.
  - Theatre time per minute = R15, 00

(vi) **Intensive care unit (ICU)**

The intensive care unit treats mainly acutely ill patient especially cardiac cases, accidents (head injuries) complicated diabetic patients; etc.

- **Treatment in intensive care unit (ICU)**

  incubation;
  suctioning;
  cardiac monitoring (for vital signs ECG, blood investigation and

respiratory;

emergency treatment;

resuscitation; and

X-rays

- **Treatment administration**

all treatment activities are recorded in the patient's file.

- **Renal unit**

The renal unit mainly deals with patients suffering from kidney failures. Patient is treated on a dialysis machine on daily basis for a maximum of 4 hours per patient.

3.3 CASUALTY DEPARTMENT

Casualty department works hard in hand with out patient department as explained in paragraph 3.2.1 on page 44. However, patients treated in this department are emergency cases. The commonly treated ailments are unconsciousness, accidents, assaults, fractures and any emergency cases.

Treatment in this department is as follows:

- Porter's service is provided on the stretcher cases;
- Pre-examination by professional nurses assessment of the patient's conditions and proper history taking vital signs like temperature, pulse, blood pressure and perspiration:
- General Practitioner's consultation;
- An expert examination of the patient which could lead to blood test;
- X-ray and operation;
- Prescription for medication depending on the case being either discharge or admission; and
- STAT doses/drugs are provided in the casualty department or treatment is ordered from pharmacy.

3.4 PHARMACEUTICAL DEPARTMENT

Pharmaceutical department is one of the cornerstones of the Mafikeng Provincial Hospital. The control and management of inventory is crucial to ensure that the hospital is giving the proper care of patients.

The issuing of treatment (medication) from pharmacy is categorised into ward stock and in-patient stock. Ward stock and in-patient stock is classified into black and blue boxes respectively. The stock issued from pharmacy is not recorded in the pharmaceutical department's record but in the ward's record.

Liquid medication and tablets are issued for 5 days and injection medication for 3 days. Nevertheless, these medications cannot be valued into rand value since the prices are kept at Mmabatho Medical Stores. Moreover, the proper classification of medication usage expenditure is for the entire hospital not for each ward.

There are medications that are issued by the pharmacist and classified under schedules 5,6 and 7 of drugs. These are referred to as substance abuse drugs. No standard rules for issuing prescriptions is in place.

3.5 Summary in the wards

In the wards the following are identified as cost drivers:

- continuous consultation;
- medication; and
- boarding and lodging.

3.6 PATIENT TREATMENT ACCOUNTING SYSTEM USED IN MAFIKENG PROVINCIAL HOSPITAL

3.6.1 Introduction

The success of the hospital is dependent on the quality service it provides to the clients, and the cost involved in the provision of those services. The

that the hospital must use budgetary and cost controls that are based on determined standards.

3.6.2 The system

In the Mafikeng Provincial Hospital there is no accounting system to support the financial accounting and management system. The current system does not account any transaction of the patient treatment from admission through discharge system. The patient's account is determined manually when the patient is discharged.

The hospital process showed that all activities performed for patient treatment are recorded in the patient's medical file, which does not have any costing thereof. The patient's files are not kept at the hospital for audit and control measures because the patient take them when they are discharged.

The fundamental principle of activity based costing that activities consume resources and that products consume activities can be utilised to effect proper accounting. This principle can be used in clearly setout steps to perform a cost calculation.

The patient treatment system can contribute to the required management accounting system. It will receive the input from the source systems, assemble costs by responsibility, equate these to control accounts and provide the financial ledgers. This system makes introduction of activity based costing system simpler.

Monthly reports can be generated via the internal report on request from the responsible manager in this case zonal matrons.

Mafikeng Provincial Hospital can be allocated to a specific activity with the assistance of codification or coding the activity. Since wards are grouped into zones with number of different wards, the codes may be described with different elements of the costing system. The cost will be composed as follows:

the first two digits	:	the hospital code
the third digit	:	zonal ward
the fourth digit	:	the discipline (ward)
the fifth digit	:	the activity group

The coded system will enable the management accountant to prepare detailed cost reports for a variety of activities in any particular ward or section. The current system for patient treatment lends itself to the activity based costing by the activity group and thereby creating new codes.

The introduction of new codes to cost patient treatment per ward would ensure that all cost items and labour utilised as a result of sickness would be traceable to the individual treatment and to the ward. Introduction of activity based costing is essential to combine it with practical business operations. It will be important to design a completely new reporting system with the introduction of an activity based costing system for determining the cost of patient treatment.

3.7 PATIENT TREATMENT COSTING

With reference to the previous discussed activities and processes in the hospital, it is important that a proper record per patient should be maintained. Presently, the patient's records entail medical records with no specific relation to costs components.

The service rendered to patient is kept in patient's file, which is not kept in the hospital. This is due to the office space problem in the hospital. The records are not reconciled with resources consumed by activities.

The fundamental principle of activity based costing; namely that activities consume resources and that products consume activities is not in place. This principle can be used in clearly setout steps to perform a cost calculation.

There is no method to calculate the price of the service rendered. Nevertheless, a pre-determined service price based on the patient economic activity (employment) and assets.

This categorised service price includes consultation fee and medical prescriptions, are shown in (a) and (b) below:

(a) **Out-patient treatment costing/pricing**

CATEGORY	INCOME BRACKET	FEE PAYABLE
H1	0 - R18 000	R17 per visit
H2	R18001 - R27 000	R34 per visit
H3	R27000 - R35 000	R51 per visit
H4	R35001 - Upward	R78 per visit

(b) **In-patient treatment costing/pricing**

CATEGORY	INCOME BRACKET	FEE PAYABLE
H1	0 - R18 000	R20 per day
H2	R18001 - R27 000	R100 per day
H3	R27001 - R35 000	R200 per day
H4	R35000 - upward	R373 per day

The fee payable per day is inclusive of medical treatment, lodging and boarding. The patient's account is determined or calculated by the out patient administration before the patient is discharged. All medical prescription from pharmacy is dispensed once the patient has paid his or her consultation fee.

3.8 CONCLUSION ON PATIENT TREATMENT COSTING

From the above it can be seen that calculating the cost for patient treatment is not based on any scientific method. It is a complicated and complex issue to relate the service pricing to service rendering. Thus, it makes it difficult to quantify service for value for money. It also makes it impossible to measure the performance of activities, resource allocation plan and cost planning for cashflow purposes.

3.9 CONCLUSION

The aim of this chapter is to give the detail description that will enable the reader to be proficient in any of the systems rather than understand the hospital activities, in order to relate the costing thereof. It gives the background and the specific environment in which the research was done.

However, there are complex components identified in the hospital operations, which could impede the introduction of an activity based costing system for determining the cost of patient treatment.

In order to introduce activity based costing system that will effectively produce an important financial tool to ensure that the system can form part of the general management and costing systems in use on the hospital. The introduction of activity based costing approach to determine the cost of patient treatment will be based mainly on the costing system to improve the current system in the hospital.

The objective of this study is to establish a system whereby actual cost of patient treatment can be determined by employing the activity based costing system to determine these costs. This would only be possible if the cognisance is taken of the current environment in which the costing exercises are to be carried out. It is very imperative to review the environment in which the costing exercise is done in order to ensure that the prime principles of activity based costing are correctly implemented under the specific conditions to ensure that the results are valid. The changing environment may either have a negative or positive impact on the implementation of the basic activity based costing principles.

CHAPTER 4

THE EMPIRICAL INVESTIGATION

4.1 INTRODUCTION

The nature of a field study determines its research method. However, one cannot operate in practice unless one has a plan, an idea, strategy or mode of action, all of which are theoretically based. The aim of this chapter is to explain the manner in which research was conducted in this field.

The validity and reliability of empirical investigation is authenticated by the scientific accountability of the researcher. Validity is said to be the attribute used to describe research methods that measure what it claims to measure. Reliability on the other hand is the attribute of research methodology that allows any researcher to repeat the procedure with the same results (Huysamen,1994:65).

The objectivity of a researcher is fundamentally the extent to which the researcher bases judgements on facts and not preconceived sentiments or intuition. The most accurate method of measurement possible should be strived for by scientific method.

The actual accuracy of measurements differs widely, depending on the field of research. This context is empirical reality, the experiential world-even when empirical methodology does not feature in the scientific process

(Heyns & Pieterse, 1990: 72). In conjunction with this particular experiential perspective one needs to have the observer perspective of empirical scientific research (empirical methodology) in order to obtain reliable or verified knowledge (Van den Ven, 1987: 161).

The aim of this chapter is to explain the population and the sample used for the collection of the data, which is to be analysed. The method utilised for the collection of data and the instrument used is also explained. The analysis is vital, as it is the base used to interpret and ultimately arrive at the conclusion of this research.

4.2 THE METHOD OF DATA COLLECTION

Empirical scientific work builds on the ordinary experiential process, but it is conducted in a conscious, systematic fashion and is monitored and verified. Experience of the environment is explored, described, tested and explained scientifically (Heyns & Pieterse,1990:73).

This investigation therefore allows the following procedure in order to comply with the scientific requirements of an empirical investigation:

- Discovery of a problem;
- Exposition of the theory;
- Initial investigation and performing preliminary study;
- Performing the empirical investigation, and
- Analysing and interpretation of the empirical results.

This chapter will only deal with the first five steps in the procedure whilst the last step of analysing and interpretation of the empirical results will be discussed in the next chapter.

4.2.1 **Discovery of the problem**

A crucial aspect or element of empirical research is to clearly identify the research problem. A treatment of patient is investigated as an isolated case, since it has the cost influence on different parties. The four major parties upon which patient treatment has a cost influence are patients, their families, the employers, economy and society as a whole.

In this research project only the patient treatment cost to the hospital is researched. The patient treatment cost is not considered as the crucial aspect in this hospital. However, the government is attempting to achieve internationally accepted indices / ratios in expenditure. This has led to budgetary constraints. Government health department has been adversely affected in the funding of its hospitals.

This is due to other factors as well; including increased demand for services, the rapid increase of re-allocations of budgets, inefficient and ineffective recovery of hospital costs and fees and often-poor management of scarce resources.

The development of the model proposed in this research will absolutely be essential to achieve increased effectiveness, efficiency, responsibility and

accountability in the public health sector. This model will assist health managers to effectively plan and manage the usage of limited resources available to them. It will also assist more objectively in determining priorities, their cost-effectiveness and clinical efficiency. The proposed model will also contribute in developing hospital managers for dealing with all aspects of management. Currently, hospital managers are mainly focussed on health issues as compared to other functional activities.

At present there is no way to hold a manager accountable to his or her budget as there are no systems in place to see what is being spent in real time and who is spending what amount on what item. The State can at present also not determine how much a specific patient or service cost and thereby determine the financial effect cutting that service.

Whether management realises the full financial impact of patient treatment on the expenditures of their hospital is questionable.

The primary reason for this state of affairs can be attributed to the fact that no reliable and accurate system is available to measure the actual cost of patient treatment to the hospital.

Through interviews with hospital managers and personnel it was identified and discovered that should activity based costing system be implemented for costing of patient treatment, hospital managers would welcome its introduction.

4.2.2 **Exposition of theory / Describing the problem**

The public hospitals are experiencing a bad situation whereby the hospital is not more able to render the services to their clients. It is a national crisis that public hospital services are continually deteriorating and finally facing closure. The problem is the holistic one at macro level that hospital managers cannot manage their financial resources.

The North West Department of Health and Developmental Social Welfare Services once tried to identify the cost allocation per district. However, the task team, named Budget-Equity Task Team was mainly focussing on the recommendations and applicability of equity principles to be used in the allocation of the budget.

The first step towards proposed equity in budget allocation to districts was to analyse information on districts after deciding which indicators should be used to move towards equity.

However, this approach did not address the need as the actual activities that are currently been performed in the hospital. Funds are rather allocated according to statistical data, which sometimes reflect a wrong position. It is evident that the budget allocation is not done according to the performance of the hospital.

It is argued that if hospital managers knew what activities are being performed, how, when and for whom, the budget allocation could be best

drawn from wards according to the notion that activities consume resources. The frequency of patient treatment multiplied by the type of sickness per period could lead to accurate estimate rather than using statistical data, which does not communicate positively.

The number of evidence of treatment and associated costs are not taken into account when evaluating a district where the hospital is rendering the service. It is eminent that the methods used lead to inaccurate evaluation and subsequent potential economic misallocation of resource, should the specific area be particularly prone to patient treatment. The financial impact of this type of understanding of patient treatment cost cannot be over-emphasised. The Budget Equity Allocation Task Team determined cost per patient per day (PDE) including goods and services as from R150, R234 and R211 for classified hospital categories; class 1; class 2 and class 3 respectively in 1998.

Their cost per patient per day was based on the following formula = Expenditure / Patient days. (Anon,1999:5).

From information given above, it is clear that accurate method to determine cost of patient treatment would have better effects.

If the patient treatment costs were known, a hospital manager would understand to determine the required treatment of a specific area more accurately. It would also assist in determining the cost benefit analysis on any patient treatment.

4.2.3 Carrying out of the initial investigation and doing the preliminary study

The problem was identified on my own individual urge or interests to determine how much does a patient cost the State for any treatment offered by the hospital. Furthermore, why community or public hospitals are facing financial crisis, and why services are deteriorating in community or public hospital.

A general preliminary study was done to compare the costs of services as rendered by both public or community hospitals and private general practitioners. The main concern was the quantity of medical prescription of community or public hospitals as opposed to the one from general practitioner. For instance, the general practitioner gave a patient only five panado pills whereas the community or public hospital prescription is a full packet of thirty panado pills (tablets).

When converting this treatment into monetary costs it is as follows:

(i) **General Practitioner's Treatment Cost**

Consultation:	R70, 00
Prescription:	
Panado tables; 30 @ R2, 50:	R15, 00
	R85, 00

(ii) **Community or Public Hospital treatment cost.**

The payments are made according to categories per income levels of patients. These categories are as follows:

H1 = R17

H2 = R34

H3 = R78

(iii) **Cost benefit analysis at category H1 is as follows:**

General practitioner treatment	R85, 00
Community hospital treatment	R17, 00
Loss incurred by Hospital:	R65, 00

4.2.4 The empirical investigation

Analysing the cost associated with twenty- (20) actual patient treatment for the treated patients as out-patient and in-patient in the Mafikeng Provincial Hospital did the empirical investigation. The actual patients analysed are acute and sick according to various ailments. The empirical investigation was done through different wards as identified in chapter 3, which gave the background to research environment.

The following were identified as elements that make up the cost of patient treatment to the community or public hospital:

- Cost incurred by the hospital;

- investigation and enquiry costs to identify patient's problem;
- medical and hospitalisation cost;
- loss of material or resources;
- administration cost, and
- loss of tolerance and integrity with the workforce customers and community.

Each of the activity cost pools relevant to the health environment will be discussed in terms of the effect it has on the cost of community hospital treatment. In some instances the activity cost pools was left out completely and in other instances a different activity pools was introduced. The basis for deciding on this was there is no current costing system on use in the hospital.

The opinions set out below includes a combination of the opinions of professional nurses interviewed by the researcher in addition to the evaluation the author did for the systems in place.

During the collection of the data in this study the following activity pools were identified as being sufficient to calculate the cost of patient treatments by means of activity based costing system.

4.2.5 **Selecting of the activities and the activity pools**

When selecting the appropriate activities the steps suggested by Coburn (1995: 57 - 59) were followed.

The steps he suggested were as follows:

Step 1: Identify major activities;

Step 2: Establish major resource pools;

Step 3: Collected cost driver information, assigned costs to each activity, and calculated cost per outcome;

Step 4: Analysed processes with costs, outcomes and benchmarks; and

Step 5: Identified additional improvement opportunities.

The introduction of an activity based costing system is essential to combine it with practical business operations.

The introduction of this approach to public service hospital management should have minimal disruptions to the present system and modus operandi of the hospital.

It is for this reason that the major activities and resource pools that were selected for this research were established to fit the proposed accounting system with the same characteristics as the current operations in the hospital.

The major underlying assumption used as a basis during the establishing of the activities and activity pools for this research in the design of the activity based costing system were:

activity consume resources, products consume activities, consumption rather than spending is modelled, resources consumed have numerous causes, activities of a wide variety can be identified and measured but cost pools should be homogenous, and the costs in each pool are variable strictly proportional to the activity.(Holmen, 1995 : 38)

During the collection of the data in this study the following activity pools where identified as being sufficient to collate the cost of patient treatments by means of activity based costing system.

(i) salaries paid to the health workers;

(ii) payment for cost incurred to investigate and identify the patient's problem;

(iii) medical and hospitalisation cost;

(iv) cost of tolerance and integrity with workforce, customers and community.

(v) any administration cost caused by the treatment was deemed to be activity cost pools to address.

In addition to identify the above activity cost pools the preliminary study indicated that the cost of the patient treatment should be divided into two categories. The one group only includes out-patient and the other group in-patients. The data was collected with some issues in mind, although during the collection phase all treatments were pooled.

The two basic categories will be separated before analyses of the data to determine the cost of referrals and admission.

4.2.5.1 **Salaries paid to the health workers.**

The empirical investigation performed tried to quantify the actual time spent on the treatment of a patient. This was done through determining the consultation period of both general practitioners and professional nurses. However, this is directly related to actual time spent on performing activities associated to patient treatment.

It was identified that the nurses spend more time on patient treatment as compared to the doctors. It is imperative to classify the consultation time for ensuring measures in determining labour hours involved.

The net affect that salary have on the cost of patient treatment, was calculated based on the following formulae:

(i). Annual salary converted into monthly salary = annual salary divide by 12 months,

(ii). Monthly salary converted into daily salary = monthly salary divide by 30 days

(iii). Daily salary converted into labour hourly rate = daily salary divide by 24 hours.

Salary cost per hour is allocated as the direct labour costs that can be easily (i.e. physically and conveniently) traced to production services. The salary per hour is allocated as the cost rate for consultation and laboratory test period for each patient.

4.2.5.2 Cost incurred to investigate and identify patient's problem

It was identified through the empirical investigation that some patients do not clearly explain their sickness to the nurses and general practitioners. As a result more time is spent on questioning the patient. The only solution left for health practitioners is to order laboratory tests for patient's blood in order to trace the ailment.

It is eminent in this hospital that laboratory tests are the call of the day. Patients took not more than three days before knowing the exact ailment, which might be fatal, if this practice cannot be improved.

The cost of patient sickness' investigation and enquiries vary a lot depending on the number of people involved. The process involves the assistant nurse, professional nurse, general practitioner (medical officer) and medical technologists from the laboratory.

When the salary costs of these people are combined it clearly indicates that one patient will cost the hospital more funds.

The results for the calculations of the costs caused by this patient treatment investigation are R7, 21 per case as shown in annexure "B".

4.2.5.3 Medical and hospitalisation cost

The type and severity of the sickness will influence the medical

treatment required by the patient. Due to the fact that the cost of hospitalisation and medical treatment can easily be traced, it would surface to only reflect the actual invoice value for each treatment investigated. The calculation of medical costs was done based on the actual cases researched in the Mafikeng Provincial Hospital during the research period.

The medical cost of patient treatment used during research was compiled as activities were performed and rates collected from different sources in the Mafikeng Provincial Hospital.

The medical and hospitalisation can be divided up into actual cost during hospitalisation (In-patient and out-patient) cost. The activities were obtained from hospital records for determining the value of invoices to the patient.

The net cost to the hospital of the costs of medical treatment of patient treatment is investigated and determined in the "Patient Treatment" in annexure "A"and table 5.1.

4.2.5.4 Loss of material resources

The empirical investigation revealed that materials or resources are lost due to over prescription of medication. It is imperative that medical prescription be prescribed according to certain medical standards. Medical prescription should be issued according to the nature of illness

and not the availability of resources. For instance pain killers must be issued or prescribed according to the medication standards to heal for the certain period not for convenience.

4.2.5.5 **Lost of tolerance and integrity with workforce, customers and community**.

Health workers interviewed showed that the hospital management does not regard them as partners in health business. It is important that all role players within all layers and levels of the organisation or hospital to take ownership for the intended project. Ownership by the entire organisation role players is very important, because it creates commitment needed to drive the process and to find the necessary solution despite constraints in the entire process. This in fact will create synergy within the entire process.

The loss of tolerance and integrity with workforce, customers and community will damage the hospital financially in an indirect way. The shortage of resources for critical medication indirectly affects the health workers who are bound by the standing orders to preserve life.

4.2.5.6 **Additional administration cost**

The research was mainly concentrating on the core business of the hospital. However, other indirect costs that are incurred and directly related to the patient treatment were not investigated such as

overheads like electricity, space utilisation, etc.

4.3 THE REASONS FOR SELECTING THE SPECIFIC METHOD

During the process of determining the subject of the research, the effectiveness as well as the efficiency of the planned study were considered to be of importance. The subject of the research is based on the provision of the RSA constitution (1996: 107) section 195 (1). (b) Efficient, economic and effective use of resources must be promoted.

The activity based costing system will enable Mafikeng Provincial Hospital management to have a better and accurate management information of cost for sound decision-making. It was therefore decided to concentrate on the patient treatment in the Mafikeng Provincial Hospital as a pilot. The magnitude of this institution would not make it possible to take everything in calculating the actual cost of patient treatment.

The Mafikeng Provincial Hospital organogram also contribute to the implementation of activity based costing system which would ultimately constitute a cost centred approach for responsibility accounting which was not researched in this study.

The Mafikeng Provincial hospital rendered numerous treatments through different wards, like casualty, outpatient, medical surgical, orthopaedic, theatre, obstetric, and paediatric. Nevertheless, the wards in this research were categorised as out-patient and in-patient to determine the actual cost of

individual patient treated in the hospital.

The approach adopted in this research was not to use statistics, which are not communicative enough. The author resorts to personalise figures and how these figures can be used for future planning. The researcher's argument is that funds are allocated according to the number of beds in this hospital. The approved number of beds is 420. The budget allocation does not take into account the turnover use of those beds.

During the research period it was established that it would be fairly possible to accurately cost the individual patient treatment in the hospital. This was possible because the Provincial Health Department was already engaged in determining patient cost in all community hospitals in the province. The task team that was established could not complete their mandate because systems vary according to the hospitals.

The available information of twenty (20) patients for determining patient treatment is considered enough to put an acceptable accurate cost to the patient treatment per day and at the same time prove the value of using activity approach to accurately costing patient treatment.

4.4 SUMMARY

The approach adopted by the Provincial Health department in determining patient treatment or patient costs was based mainly on statistical data, which often focus on precision and ignore the accuracy of the data used. During the

empirical investigation, it was identified that records on patient treatment costs are not correct and up to date, and that might affect the health manager's decision making.

However, in determining the costs during the empirical investigation, recommendations as laid out by the literature were followed. The plan of study was followed based on the guidance of the literature review.

In the introduction of an activity based costing system, it is essential to combine it with practical business operations. In this case, the operations should be organised in the sense that they will suite any proposed system to be implemented, as well as the accounting system. The results after evaluating the current accounting system suggest that an immediate overhauling or implementing the new developed system to resuscitate the accounting system in place is necessary.

During the course of the investigation it was identified that major activities are not well co-ordinated, there is no synergy amongst departments. The important activities are performed in their own independence without linking with others. For instance, wards are in shortage of medication whereas pharmaceutical department does not know the shortage or lack of resources.

It was established that it would be economic advantage to group activities to one activity. Thus the integration of several associated activities into one cost centre would decrease the clerical functions and cost saving.

CHAPTER 5

INTERPRETATION, SUMMARY AND RECOMMENDATIONS

5.1 INTRODUCTION

Cost and management accounting is the science that ensures that relevant decision-making is made available to management. In any organisation, cost and management accounting is utilised for decision-making and control (Brown et al, 1994: 2). The gospel according to St Luke 14: 28 emphasised this concept that indeed if there is an intention to build a tower, planning needs to be done as to how much cost is needed to finish the job with that allocated money.

The primary objective of this research was to establish a system whereby the actual patient treatment cost could be determined as accurately as possible by utilising the activity based costing to determine the costs. If the patient treatment cost is known the health managers will be able to plan effectively and utilise the available resources efficiently.

The empirical investigation was conducted on twenty patients treated at Mafikeng Provincial Hospital to analyse the cost incurred.

The other objective of this research analysis was to implement activity based costing system that will assist the hospital management in evaluating activities performed to determine the economical expenditure level, to minimise costs on patient treatment to improve quality of service.

It was identified that there was lack of control for patient treatment costs, which might result in financial losses and underestimating financial planning. There is a total lack of internal control system pertaining to the utilisation of resources (human, capital, material and consumables). However, this aspect of internal control system was not thoroughly investigated, as it does not constitute the integral part of the research.

5.2 EVALUATION OF COST ACTIVITY POOL RESULTS

Proper evaluation of the treatment cost data was grouped and calculated during the empirical investigation process. The data was sorted into two categories namely out-patient and in-patient treatment which were isolated to obtain the total costs of the treatment.

5.2.1 **Out-patient treatment cost**

The total cost of the patient treatment was determined based on actual activities performed on individual patient per day. The total cost for diabetic patient are shown by table 5.1 which is an extract from annexures "A" and "B".

TABLE 5.1: Diabetic patient treatment costs in out-patient Department (OPD)

ACTIVITIES PERFOMED	COST DRIVER	COST RATE	AMOUNT
1. Consultation Period			
(a) Professional nurse	5/60 minutes	R4.36	0.36
(b) General practitioner	10/60 minutes	R6.75	1.13
(i) Labour Cost		I	R1.49
2. Treatment Prescribed Medication			
	- Diamacron:40mg/60 tablets	R11.29	11.29
	- Insulin syringe x 1	R9.60	9.60
	- Actraphane 30ml x 3 x 1	R83.61	83.61
	- Glucophage 500mg x 1	R37.47	34.47
(ii) Direct material Cost		ii	R141.97
3. Laboratory Activities	Test		
(a) Test	- Random blood sample (RBS) x 1	R14.56	14.56
	- Full blood sample (FBS) x 1	R14.56	14.56
			R29.12
(b) Investigation Cost			
- Medical Technologist	80/60 minutes x 1	R3.85	5.13
	20/60 minutes x 1	R4.55	1.52
- Senior Medical Technologist	5/60 minutes	R6.75	0.56
- General Practitioner/ Medical Officer			R7.21
Total			36.33
Overheads		iii	179.79
TOTAL PATIENT TREATMENT COST (i+ii+iii)			

5.2.2 In-patient treatment cost

The calculation of the total cost for patient treatment was based on the principles adopted in paragraph 5.2.1 above.

The total cost that were determined ranges from a minimum costs of R283.37 to the maximum costs of R3776.65 per day depending on the nature of sickness and treatment . The classical cases will be shown according to the nature of wards in the following paragraph: -

(a) Speciality wards

It was identified that these wards are incurring high expenditures due to the nature of treatment offered. The actual costs determined for patient treatment per day for surgical is R3776.65 shown by Table 5.2 below:

TABLE 5.2: Appendicitis patient treatment cost in surgical and orthopaedic ward

ACTIVITIES PERFOMED	COST DRIVER	COST RATE	AMOUNT
1. Consultation Period			
(a) Professional Nurse	20/60 minutes	R4.36	R1.45
(b) General Practitioner	10/60 minutes	R6.75	R1.13
2. Ward Consultation			
(a) Professional Nurse	360/60 minutes	R4.36	R26.16
(b) General Practitioner	20/60 minutes	R6.75	R2.25
Direct Labour Cost			R30.99
3. Theatre Activities			
(i) Theatre Time	215 minutes	R15.00	R3225.00
(ii) Theatre Stock	Materials x medication x 1	R233.75	R233.75
(iii) Ward Stock	Material	R22.75	R22.75
			R3481.50
4. Activities			
Tests	- Full Blood Count (FBC) x1	R22.88	R22.88
	- U & E x 1	R56.16	R56.16
	- Blood Clotting	R43.68	R43.68
	- LFT	R141.44	R141.44
			R264.16
TOTAL PATIENT TREATMENT COST			3776.65

(b) General Wards

The general wards deals with all kind of sickness, and the average patient treatment cost was determined from R174.24 to R283.37 per day of admission.

The total costs for tuberculosis patient are shown in table 5.3 below:

TABLE 5.3: Tuberculosis patient treatment costs

ACTIVITIES PERFOMED	COST DRIVER	COST RATE	AMOUNT
1. Consultation Period			
(a) Professional Nurse	5/60 minutes	R4.36	R0.36
(b) General Practitioner	5/60 minutes	R6.75	R1.13
2. Ward Consultation			
(c) Professional Nurse	240/60 minutes	R4.36	R17.44
(d) General Practitioner	30/60 minutes	R6.75	R3.38
Direct Labour Cost			R22.31
3. Treatment Prescribed Medication	- Nebulizer stat x 1	R4.68	R4.68
	- Aminophylline 250ml x 3	R0.69	R0.69
	- Normal 200ml x 1	R7.36	R7.36
	- Refutter 100 tablets x 1	R44.91	R44.91
	- Aminothyl 50ml x 1	R0.69	R0.69
	- Ethenmol 400mg x 2	R79.50	R159.00
Direct material			R218.71
4. Laboratory Activities Tests	- Full Blood Count x1	R22.88	R22.88
	- (ESR) x 1	R8.32	R8.32
			R31.20
5. Boarding & Logging Meals	Three meals per day x 1	R10.50	R10.50
TOTAL TREATMENT COST			R282.72

5.3 ACHIEVEMENT OF THE OBJECTIVE

Based upon the calculation, it can thus be stated that the cost of patient treatment is calculated and determined based on the principles of activity based costing system (refer annexure "A").

The figure or amount that the patient must pay according to hospital tariffs is much lesser than the actual cost incurred to perform the treatment.
The results obtained during this study therefore prove that the cost of patient treatment is currently and largely underestimated in Mafikeng Provincial Hospital.

5.4 THE SUCCESS OF THE PURPOSES

During the research the aim of the research was to attempt and determine the cost of patient treatment to the hospital that would directly influence the cash flow of the hospital.

This study has proved that the activity based costing is a suitable system upon which to base a technique for calculating the cost of patient treatment. Activity based costing principles are beneficial in determining the cost, albeit the difference in the nature of patient treatment.

During the empirical investigation activity based costing provides visibility to information that was previously hidden in the traditional accounting system.

With the right data and corporate culture, health workers will have the means and the incentive to work towards eliminating excess costs and to work towards achieving the most affordable product possible.

5.5 LIMITATIONS

The primary aim of management is the issue of cost. However, today's continuing challenge is to do more with less. Thus, the use of activity based costing in determining the patient treatment cost is no exception.

It should be the priority of management to ensure that any costing system is guided by the potential savings and benefits that system would provide.

It is imperative for management not to concentrate more on why costs were there in the first place. In the design of activity based costing system its basic principles should be followed.

The design of activity based costing system should be minimum cost and complexity. The final objective for activity based costing system should provide relevant data at the right level of detail.

5.6 STRATEGY FOR IMPLEMENTATION

Implementation of an activity based costing system requires support from all layers in an organisation. The purpose of developing a successful support strategy is to gain support and commitment for the initiative from senior

management. Giving them responsibility to initiative will in turn encourage support and acceptance from the staff.

(a) **Planning and training**

Planning, training and technical assistance from experienced specialists, whether internal or contracted, can ensure that staff members are well versed with working knowledge of activity based costing and its benefits that have been obtained. Managers will understand how valuable it is as a tool to "work smarter not necessarily harder".

(b) **Identifying activities, drivers and processes**

What activities cost, how efficiently and effectively activities are being performed and whom the benefactors are of the activities performed, will enable management to manage instead of simply spending.

(c) **Cost flow diagram**

If activity based costing system is successfully designed and implemented, it has the ability to transform financial management because it builds on the existing financial systems and process.
It should be marketed to financial management staff to ensure that all budget and financial system requirements are identified and satisfied within the parameters of management accounting.

(d) **Data collection and synthesis**

Activity based costing system is crucial because it tells managers which products or services make or loose money, information, which they don't know. Traditional cost allocations often depict an unrealistic, inadequate view of profitability, sometimes distorted information by hundred per cent (100%).

(e) **Support performance improvement and process management action**

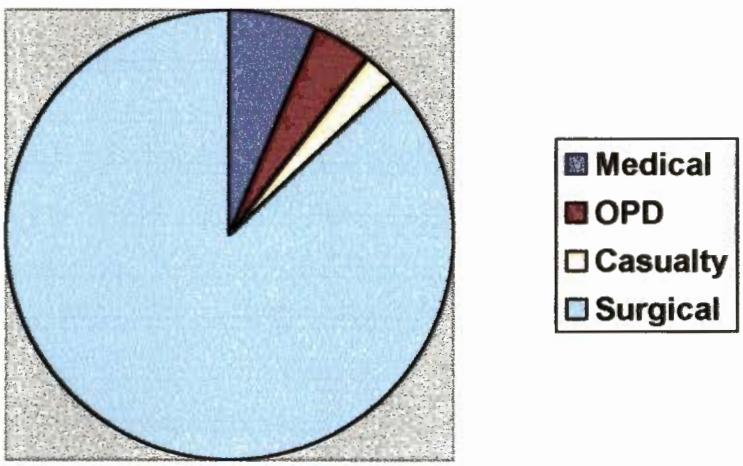
Activity based costing is the catalyst for process improvement and management, performance measurement, and customer / product / service optimisation.

5.7 SUMMARY

The research had revealed most exciting and complex issues pertaining to the management of resources in the hospital industry. The interviewed workforce or personnel had shown keen interest for the introduction of activity based costing system in their working environment. It was identified that activity based costing could assist in measuring the performance of individual wards according to their activities performed.

TABLE 5.4: Wards patient treatment cost per day

WARDS	COST PER DAY	COST RATIO
Medical	282.72	7%
OPD	179.79	4%
Casualty	101.68	2%
Surgical	3776.65	87%
	4340.84	100%



The entire majority of the workforce in the Mafikeng Provincial Hospital is aware of the gospel concerning costs, but they do not have a mechanism to determine their daily costs and control. The success for introduction of an activity based costing system in computing patient treatment cost would primarily depend on the understanding, involvement and commitment of all participants in assimilation, computation and evaluation of activity costs.

It is imperative for the health-workers (administrative staff, medical technologists, professional nurses and medical practitioners) to take ownership of the process from the beginning until the end.

The level of ownership in the entire process could be emphasised by the cost ratio which could be linked to the responsibility involved (annexure "A").

The implementation of activity based costing system could be influential for financial management needed by the budget managers. Decisions involving the taking into account cost and performance for financing an activity falls within decision making of those managers.

During the research process it was identified that the medical officers (general practitioners) do not perform thorough examination on the patients rather they use laboratory results (tests) for identifying the ailment and treatment. The patient treatment cost revealed that general practitioners consultation cost is R1, 69 (six per cent) and laboratory activity R27, 69 (ten per cent) excluding other labour cost for performing the test as per table 5.1 on page 81.

Activity based costing system give management a clear picture to measure performance of activities for proper resource allocation.

The researcher believes that the research document could be used as a guiding instrument to introduce activity based costing to ascertain the patient treatment cost in the hospital by utilising principles and procedures described hereof.

The current hospital operations or systems could be converted into the desired accounting system because there is no accounting system in place.

The researcher is of the opinion that manual operations be immediately implemented. During the research it was identified that the entire hospital administration is still crawling towards modern technology. It is crucial to ensure that a stand alone computer be introduced or placed per zonal ward for capturing data in terms of principles and procedures proposed in this research document.

The hospital structure as described in chapter 3 makes it simple to introduce cost codes for tracing individual treatment. This can only be achieved by introducing an activity group as the cost composition; hospital code; zonal ward, disciplines (ward) an activity group. All activities performed must be coded according to the nature they are being executed, which will ensure successful implementation.

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ANNEXURE "A"

PATIENT TREATMENT COST

ANNEXURE "A"

PATIENT TREATMENT COST

ACTIVITIES PERFORMED	OBSTETRIC WARD	COST RATE R	AMOUNT R	COST RATIO (%)	MEDICAL WARD	COST RATE R	AMOUNT	COST RATIO(%)
TYPE OF ILLNESS: PREGNANT MOTHER				DIABETIC				
1. CONSULTATION PERIOD Professional nurse General Practitioner	 30/60 minutes@ 15/60 minutes@	 4,36 6,75	 2,18 R1,69		 5/60 minutes @ 10/60 minutes @	 4,36 6,75	 0,36 1,13	
2. WARD CONSULTATION Professional nurse General Practitioner	 60/60 minutes@ 20/60 minutes@	 4,36 2,25	 4,36 2,25 10,48	 3,69	 80/60 minutes @ 30/60 minutes @	 4,36 6,75	 5,81 3,38 10,68	 6,129
3. TREATMENT PRESCRIBED	(i) Petherdin 25mg x 3@ (ii)Aminophyllin 250 ml x 10@ (iii) Folic acid 29 @ (iv) Multivate 100mg @	0,76 0,69 0,63 1,13	R2,28 R6,90 R17,64 R1,13 R27,95	9,86	(i) Glucolphage 500 mg @ (ii) Insulin Actraphane 10ml x 30 @	13,29 27,87	13,29 83,61 96,90	55,612
4. LABORATORY ACTIVITIES	(i) Fullblood colour @ (ii) U & E 1@ (iii) L & F 1@ (iv) WR* 1 @	 R22,28 R56,16 R141,44 R14,56	 22,28 56,16 141,44 14,56 234,44	 82,73	(i) U & E @	56,16	 56,16	 32,231
5. BOARDING & LODGING	1. Breakfast @1 2. Lunch @1 3. Supper @1	2,50 3,49 3,57	2,50 3,49 3,51 10,50	3,70	Breakfast @ Lunch @ Supper @	2,50 3,49 3,57	2,50 3,49 3,51 10,50 174,24	6,026
GRAND TOTAL COST			283,37	100%				100%

PATIENT TREATMENT COST

ACTIVITIES PERFORMED	MEDICAL WARD	COST RATE (R)	AMOUNT (R)	COST RATIO%	CASUALTY (R)	COST RATE (R)	AMOUNT (R)	COST RATIO (%)
TYPE OF ILLNESS: TUBERCULOSIS				Chronic renal, failure, mellitus				
1. CONSULTATION PERIOD Professional nurse General Practitioner	 5/60 minutes @ 5/60 minutes @	 R4,36 R6,75	 0,36 1,13		 5/60 minutes 10/60 minutes	 R4,36 R6,75	 0,36 1,13 1,49	 1,465
2. WARD CONSULTATION Professional nurse General Practitioner	 240/60 minutes @ 30/60 minutes @	 R4,36 R6,75	 17,44 3,78 22,71	 8,049				
3. TREATMENT PRESCRIBED	(i) Neblizer Stat @ (ii) Aminophylline 250 ml x 3 (iii) Normal Siline 200 ml @ (v) Refuter 100 tables @ (vi) Cemonithyl 50 ml @ (vii) Ethenmol 400mg @	R4,68 0,69 R7,36 R44,91 R0,69 R79,50	4,68 2,07 7,36 44,91 0,69 158,00 217,71	 77,169	(i) Claforan 1000 mg @ (ii) Amircarcin 500 mg x 3 @ (iii) Panado tables 20 @ (iv) Multivate 1000 mg @	R24,31 R5,85 R1,30 R1,13	R24,31 R17,55 R26,00 R1,13 68,99	 67, 850
4. LABORATORY ACTIVITIES	(i) FBC (ii) ESR	@ R22,88 @ R 8,32	R22,88 8,32 R31,20	 11, 059	(i) FBC @ (ii) ESR @	R22,88 R 8,32	R22,88 R 8,32 R31,20	 30, 685
5. BOARDING & LODGING	1. Breakfast @ 2. Lunch @ 3. Supper @	R2,50 R3,49 R3,51	R2,50 R3,49 R3,51 R10,50	 3, 721				
GRAND TOTAL COST			R282,12	100%			101.68	100%

PATIENT TREATMENT COST

ACTIVITIES PERFORMED	OPD	COST RATE	AMOUNT	COST RATIO %	OPD	COST RATE	AMOUNT	COST RATIO %
TYPE OF ILLNESS:	DIABETIC				HYPERTENTION			
1. CONSULTATION PERIOD Professional nurse General Practitioner	 (i) 5/60 minutes @ (ii) 10/60 minutes @	 R4,36 R6,75	 0,36 1,13 1,49	 0,863	 (i) 7/60 minutes @ (ii)10/60minutes @	 R4,36 R6,75	 0,51 1,13 1.64	 2,784
2. WARD CONSULTATION Professional nurse General Practitioner								
3. TREATMENT PRESCRIBED	(i) Diamacron 40mg/60tables (ii) Insulin syringe 30 (iii) Actraphane 30ml x3 (iv) Glucophage 500mg	 11.29 9,60 83,61 37,47 141,97	 11,29 9,60 83,61 37,47 141,97	 82,263	(i) Aldomat 500mg/100 tables @ (ii) hydrochlorothized tables 28 x 30@	 23,06 1,14	 23,06 34,20 57,26	 97 215
4. LABORATORY ACTIVITIES	(I) RBS @ (ii) FBS @	R14,56 R14,56	14,56 14,56 29,12	 16, 873				
5. BOARDING & LODGING	1. Breakfast @ 2. Lunch @ 3. Supper @							
GRANT TOTAL COST			172,58	100%			58,90	100%

PATIENT TREATMENT COST

ACTIVITIES PERFORMED	SURGICAL WARD	COST RATE	AMOUNT	COST RATIO %	SURGICAL & ORTHOPAEDIC	COST RATE	AMOUNT	COST RATIO %
TYPE OF ILLNESS: APPENDICITIS					CONGENITAL DEFORMITIES OF FEET			
1. CONSULTATION PERIOD Professional Nurse General Practitioner	 20/60 minutes x 10/60 minutes x	 R4,36 R6,95	 R1,45 R1,13		 20/60 minutes 10/60 minutes	 @ R4,36 @ R6,75	 1,45 1,13	
2. WARD CONSULTATION Professional Nurse General Practitioner	 360/60 minutes x 20/60 minutes x	 R4,36 R6,75	 R26,16 R 2,25 R30,99	 0,494	 240/60 minutes 20/60 minutes	 @ R4,36 @ R6,75	 17,44 2,25 22,27	 1%
3. THEATRE ACTIVITIES Theatre time Theatre stock Ward stock	 215 minutes Stock Stock	 @ R15,00 @ R233,75 @ R 22,55	 R3225,00 R 233,75 R 22,55 R3481.00	 95, 293	 125 minutes Oxygen, nitronsoxide Ward stock	 @ R15,00 @ R 1,87	 R1875,00 R 233,75 R 22,55 R2131,00	 96%
4. LABORATORY ACTIVITIES	(I) FBC (ii) U&E (iii) Clotting (iv) LFT	@ R22,88 @ R56,16 @ R43,68 @R141,44 R264,16	22,88 56,16 43,69 141,44 264,16	 4,212	FBC U & E	R22,88 R56,16 R79,04	22,88 56,16 79,04	3%
5. BOARDING & LODGING								
GRAND TOTAL COST		R6270,48	R3779,00	100%			R2232,31	100%

PATIENT TREATMENT COST

ACTIVITIES PERFORMED	SURGICAL WARD	COST RATE	AMOUNT	COST RATIO %	CASUALTY WARD	COST RATE	AMOUNT	COST RATIO %
TYPE OF ILLNESS: ARMFRUCTURE (AFTER OPERATIONS)					BRONCHI PNEUMONIA			
CONSULTATION PERIOD Professional Nurse General Practitioner	 5/60 minutes 10/60 minutes	 @ R4,36 @ R6,75	 R0,36 R1,13		 8/60 minutes 10/60 minutes	 @ R4,36 @ R6,75	 0,36 1,13	
WARD CONSULTATION Professional Nurse General Practitioner	 240/60 minutes 20/60 minutes	 @ R4,36 @ R6,75	 R17,44 R 2,25 R22,27	 5,765			 R1,49	 0,887
TREATMENT PRESCRIBED	(i) Vitamin B - co 28 (ii) Bascopen 10mg x 10 (iii) Panado tables x 30 (iv) Rengus laetal 1000ml	@ 0,83 @ R2,79 @ R1,03 @ R9,63 R82,04	23,24 27,90 30,90 9,63 91,67	 24,315	(I) Diamicron tablets 40mg (ii) Enalapril tablet 20 mg (iii) Adalat tablet 20 mg (iv) Cephalexin tablet 500 mg	@ R11,29 @ R37,62 @ R11,86 @ R26,54	R11,29 R37,62 R11,86 R26,54 R87,31	 52,019
4. LABORATORY ACTIVITIES	(I) FBC (ii) U&E (iii) Clotting profile (iv) LFT	@ R22,88 @ R56,16 @ R43,68 @ R141,44	R22,88 R56,16 R43,68 R141,44 R264,16	 70,067			 79.04	 6,47,09
5. BOARDING & LODGING	1. Breakfast 2. Lunch 3. Supper	@ @ @						
GRAND TOTAL COST		R377,01	100%				167,84	100%

ANNEXURE "B"

PATIENT AILMENT INVESTIGATION COST

ANNEXURE "B"

PATIENT AILMENT INVESTIGATION COSTS
LABORATORY ACTIVITIES

Investigation of test : Medical Technologist	80/60minutes x 3,85 =	R5,13
Validation of test : Senior Medical Technologist	20/60minutes x 4,55 =	R1,52
Interpretation of test : Medical Officer :	5/60minutes x 6,75 =	R0,56
LABOUR COST PER TEST		R7,21

CALCULATIONS OF LABOUR HOURLY RATES

The hourly was calculated based on new salary grading system implemented from 1 July 1996 over a period of three years. The extracts from salary grading system according to Department of Public Services Administration records as per annexure "D"

(i) **Medical Officer (General practitioner) Rank 9 refer Annexure "D"**

Annual salary of R58 716

Labour hourly rate	=	R58716/12 = 4893/30	=	R162,10 per day
	=	R162,10 per day/24 hrs		
	=	R6,75 per hour		

(ii) **Professional nurse (Rank 6) (refer annexure "D".**

Annual Salary of 37,719

Labour hourly rate	=	R37,719/12 = 3143,25/30	=	R104,75 per day
	=	R104,75 per day/24 hours		
	=	R4,36 per day		

(iii) **Medical Technologist (Rank 6) (refer annexure "D"**

Annual Salary of R42,972

Labour hourly rate	=	R42,972/12 = R3581/30	=	R119,36 per day
	=	R119,36 per day/24 hours		
	=	R3,85 per hour		

(iv) **Senior Medical Technologist (Rank 7) refer annexure "D"**

Annual Salary of R50,844

Labour hourly rate	=	R50,844/12 = 4237/30	=	R141,23 per day
	=	R141,23 per day/24 hours		
	=	R4,55 per hour		

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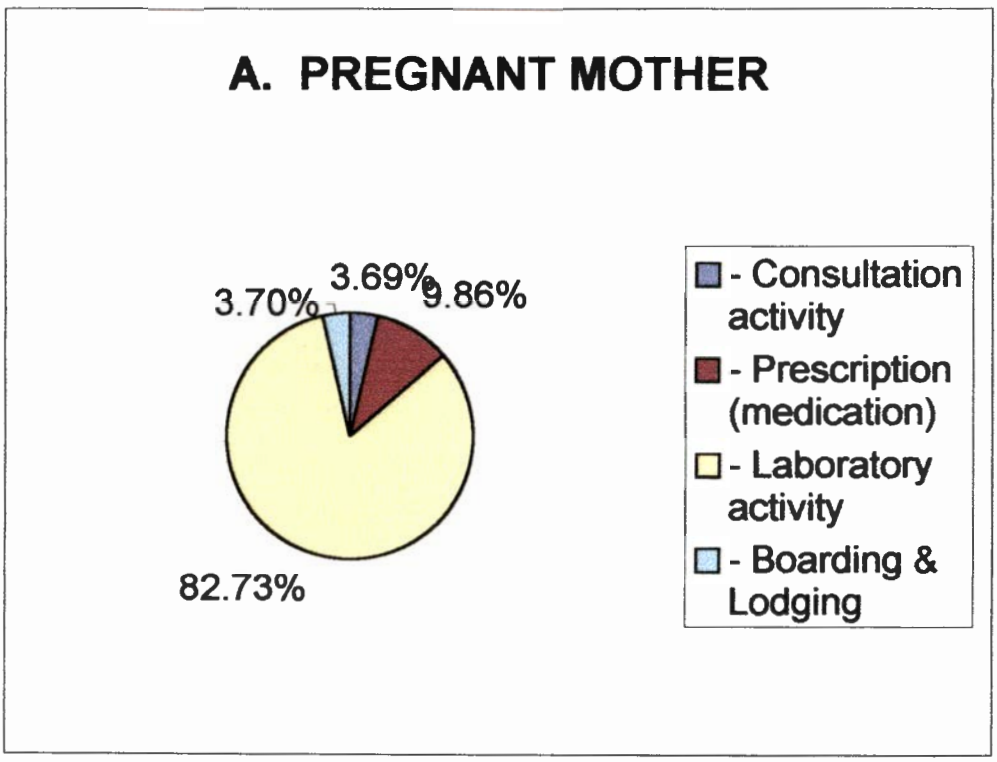
ANNEXURE "C"

ACTIVITY PERFORMANCE MEASUREMENT

ANNEXURE "C"

ACTIVITY PERFORMANCE MEASUREMENT

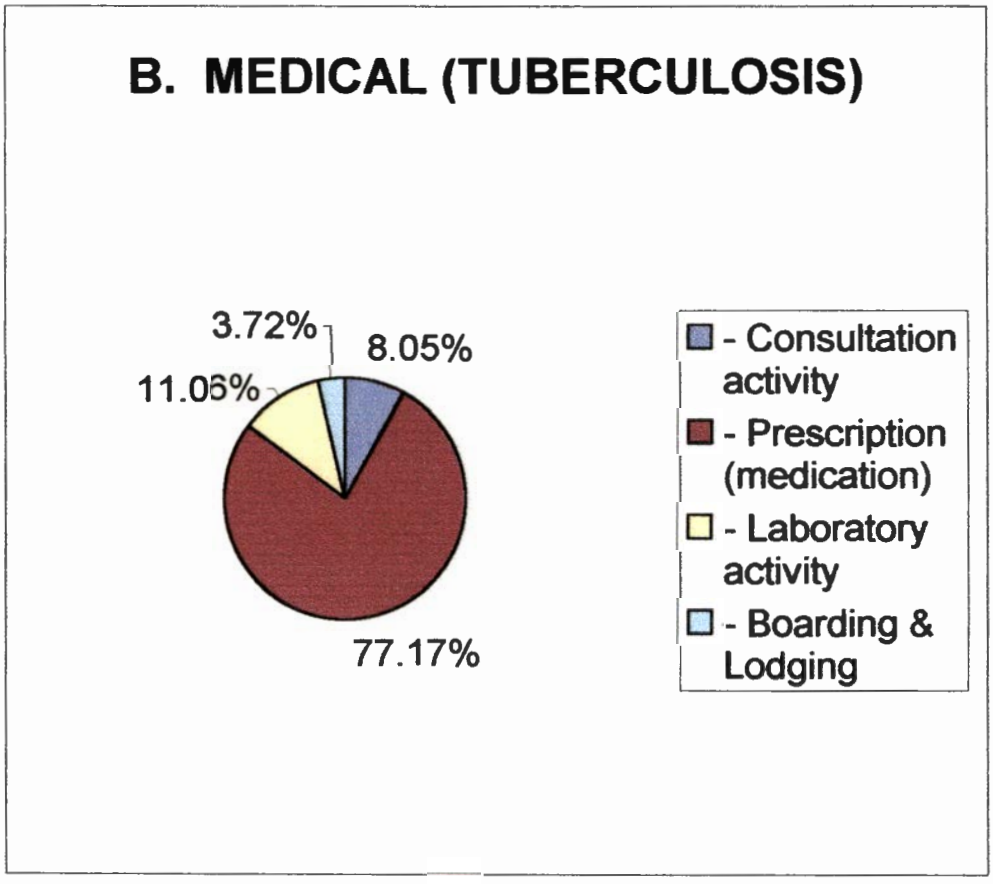
ACTIVITY	COST RATIO	COST
- Consultation activity	3.69%	R 10.48
- Prescription (medication)	9.86%	R 27.95
- Laboratory activity	82.73%	R 234.44
- Boarding & Lodging	3.70%	R 10.50



ANNEXURE "C"

ACTIVITY PERFORMANCE MEASUREMENT

ACTIVITY	COST RATIO	COST
- Consultation activity	8.05%	R 22.71
- Prescription (medication)	77.17%	R 217.71
- Laboratory activity	11.06%	R 31.20
- Boarding & Lodging	3.72%	R 10.50

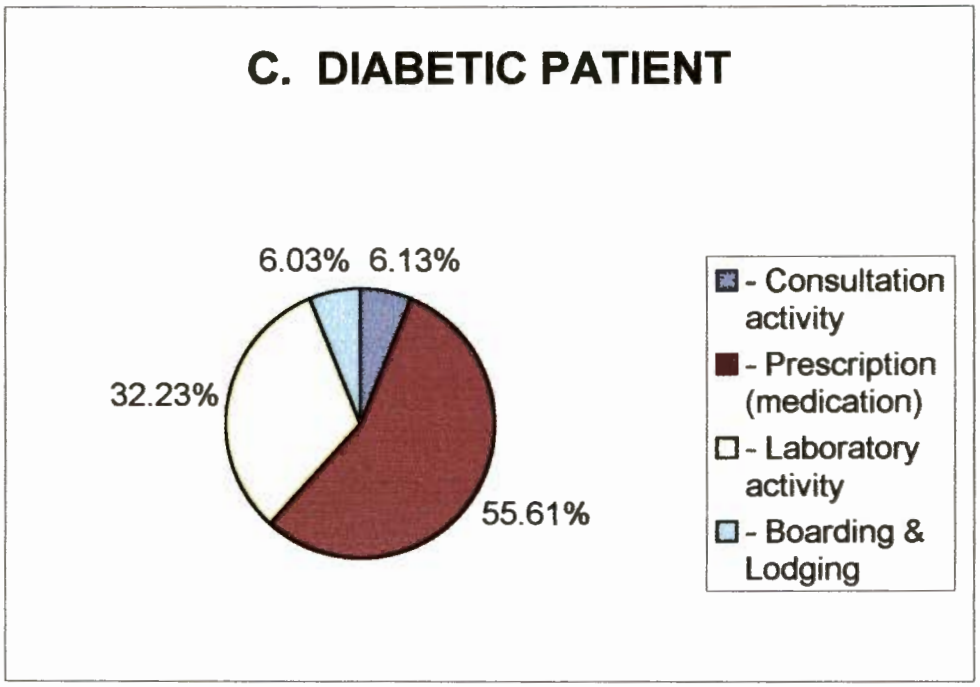


ANNEXURE "C"

ACTIVITY PERFORMANCE MEASUREMENT

B DIABETIC PATIENT

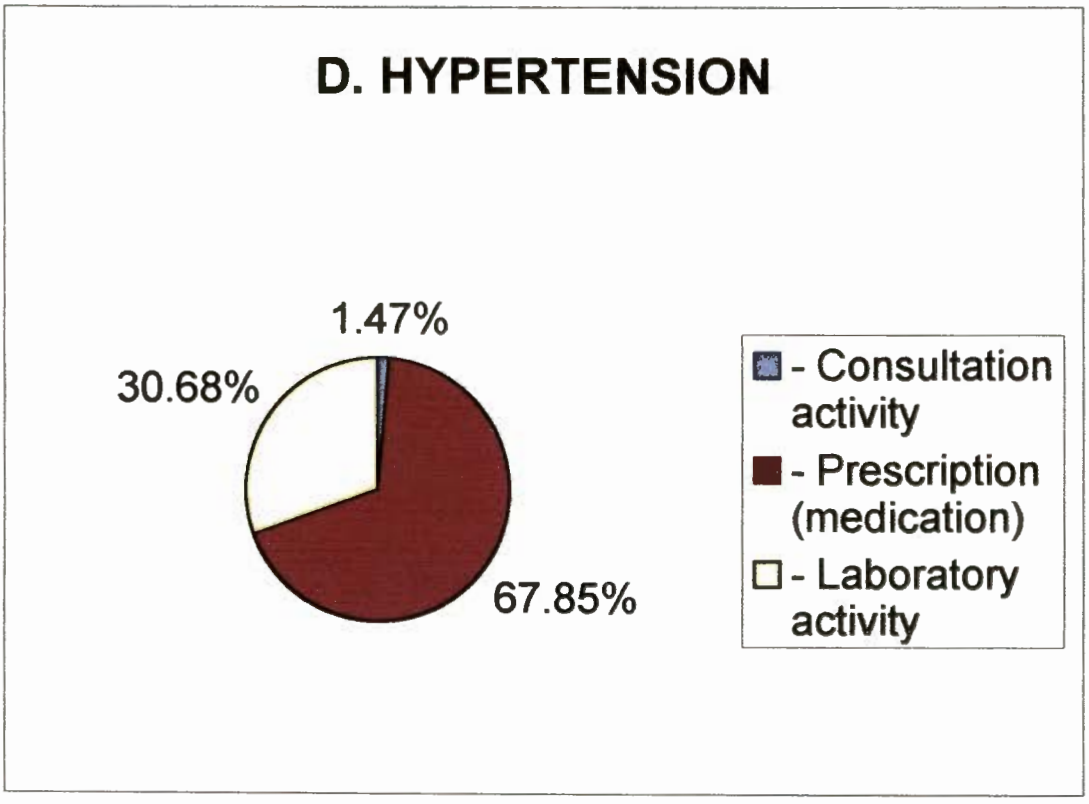
ACTIVITY	COST RATIO	COST
- Consultation activity	6.13%	R 10.68
- Prescription (medication)	55.61%	R 96.90
- Laboratory activity	32.23%	R 56.61
- Boarding & Lodging	6.03%	R 10.50



ANNEXURE "C"

ACTIVITY PERFORMANCE MEASUREMENT

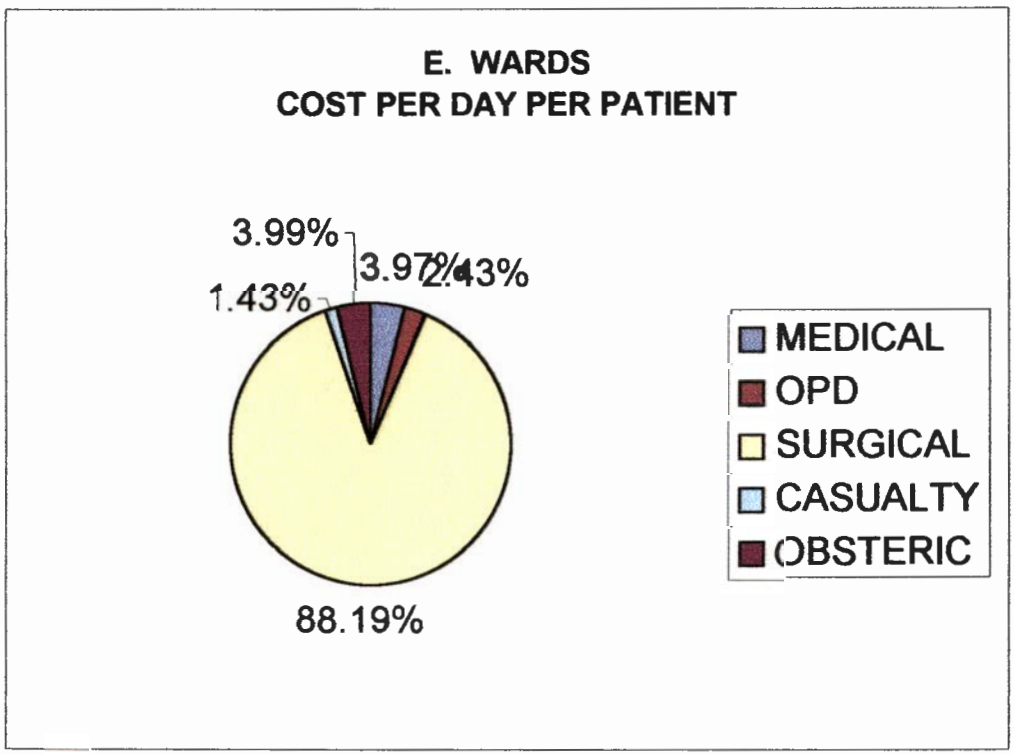
ACTIVITY	COST RATIO	COST
- Consultation activity	1.47%	R 1.49
- Prescription (medication)	67.85%	R 68.99
- Laboratory activity	30.68%	R 31.20



ANNEXURE "C"

ACTIVITY PERFORMANCE MEASUREMENT

ACTIVITY	COST RATIO	COST
MEDICAL	3.97%	R 282.12
OPD	2.43%	R 172.58
SURGICAL	88.19%	R 6,270.48
CASUALTY	1.43%	R 101.68
OBSTERIC	3.99%	R 283.37



ANNEXURE "D"

PUBLIC SERVICE SALARY GRADING SYSTEM

Department of Public Service and Administration

X916 PRETORIA 0001
(012) 314-7911 • FAX (012) 323-2386

X9148 CAPE TOWN 8000
(021) 462-2238 • FAX (021) 462-229

B van der Walt 314 7258
M du Rand 3147181

REF • 1/2/1/1

TO ALL HEADS OF DEPARTMENT/PROVINCIAL ADMINISTRATIONS/OFFICES OF PROVINCIAL SERVICE COMMISSIONS

1998 -09- 23

CIRCULAR NO. 1 OF 1998

IMPROVEMENTS IN CONDITIONS OF SERVICE: 1 JULY 1998

1. Agreement has been reached in the Public Service Co-ordinating Bargaining Council (PSCBC) on improvements in conditions of service for personnel employed in terms of the Public Service Act, 1994, the Correctional Services Act, 1959, the Defence Act, 1957, Police Service Act, 1995 and the Educators Employment Act, 1994 for the 1998/99 financial year. (A copy of the agreement is attached as Annexure A.)

2. The agreement provides for:

   (a) A differentiated salary adjustment up to salary level 12, to be implemented with effect from 1 July 1998 in respect of all persons on salary notches on the salary key scale which was implemented with effect from 1 July 1997.

   (b) A salary adjustment for personnel on salary levels 13 and 14 **who are defined as professionals** (also note paragraphs 12 and 13).

   (c) The allocation of R200 million to be allocated to the sectoral councils of the PSCBC and the South African National Defence Force.

   (d) The establishment of a Skills Development Committee by each sectoral council to design a training plan for the relevant sector.

   (e) Parties to the PSCBC to initiate and oversee a skills audit in the Public Service with a view to match service delivery with personnel and skills requirements.

   (f) The Government Employees Pension Fund (GEPF) to increase the pensionable years of service or implement other measures for employees disadvantaged by past racial or gender discrimination

related to pensions. (The Pensions Task Team shall make proposals on the allocation of funds no later than 1 November 1998.)

3. The possible adjustment of salaries for personnel not regarded as professionals (members of the management echelon) on levels 13 and 14 and personnel on levels 15 and 16 will be concluded separately. **Departments/provincial administrations may not affect salary adjustments for members of the management echelon at this stage.**

SCOPE OF APPLICABILITY

4. With the exception of the personnel groups mentioned in paragraph 5, the salary adjustments in terms of this circular apply to officers and employees as well as the personnel of the institutions referred to in Public Service Staff Code K.II/VI/3, which are in service on the date of implementation of the adjustments or are appointed thereafter unless indicated otherwise. Should any remuneration, rates, allowances, etc., exist which have to be adjusted and which are not covered in this circular or the annexures, proposals for the adjustment thereof should be submitted to the Department through the prescribed channels with a view to co-ordination.

5. The measures contained in this circular do not apply to the personnel groups listed below. The (possible) adjustment of salaries of these personnel groups, or the implementation/adjustment of the formulae to accommodate such improvements, is being dealt with separately and where applicable, particulars thereof will be announced as soon as possible by the authorities concerned:-

(a) Personnel of Sheltered Employment Factories and Workshops for the Blind.

(b) CS Educators.

(c) Personnel employed in terms of the South African Police Service Act, 1995.

(d) Military University Educators.

(e) Personnel of the scientific councils (CSIR, MINTEK, HSRC, MRC, ARC, SABS, FRD and CGS).

(f) Personnel of certain institutions linked to the Department of Arts, Culture, Science and Technology.

(g) Personnel of the councils for the performing arts.

IMPLEMENTATION

6. The Minister for the Public Service and Administration has approved, on recommendation of the Public Service Commission, that the following adjustments be effected with effect from 1 July 1998:

   (a) The adjustment of salaries of all full-time personnel who are on salary notches on the salary key scale, implemented with effect from 1 July 1997, up to and including salary level 12 in accordance with the translation key attached as Annexure B.

   (b) The adjustment of the salaries of the following personnel in accordance with the translation key attached as Annexure C:

   - Part-time personnel employed on a 5/8 th basis.

   - Part-time personnel employed on a 6/8 th basis (items 20.1(3) and (4) of the PAS's for the occupational classes Administration Clerk and Typist refer).

   (c) The adjustment of salary notches contained in the Public Service Staff Code in accordance with Annexure D.

   (d) The translation of certain personnel who are on the salary key scale which applied on 30 June 1996 to the new salary grading system. Departments will have to approach this Department with requests for translation keys for such personnel.

MEASURES THAT MUST BE COMPLIED WITH WHEN TRANSLATING PERSONNEL

7. In view of the fact that with implementation of the new salary grading system annual notch increments have fallen away, Chapter K.II/III/A of the Public Service Staff Code does not apply in respect of the translation of personnel in accordance with Annexures B and C to this circular.

8. Personnel on personal salary scales/notches on the salary key scale, which applied on 30 June 1996, will again have to be offered the choice to be translated to the revised grading system. Such persons must again exercise the choice as per the form attached as Annexure E. Full details of such personnel must be submitted to this Department for a recommendation of how they should be translated.

9. All persons who are on personal salary scales on the salary key scale which applied on 30 June 1996 and who qualify for an annual notch increment on

1 July but who will be translated to the new grading system, will not receive an annual notch increment on 1 July 1998 before translation to the new grading system.

EFFECT OF THE ADJUSTMENT ON GENERAL CONDITIONS OF SERVICE

10. For the purpose of classifying officers and employees according to their salaries, when applying the directives with regard to official journeys, means of transport, subsistence allowance and the Motor Financing Scheme for Senior Officers, officers and employees who receive personal salaries higher than the maximum of the standard salary ranges attached to their ranks are deemed to be in receipt of salaries equivalent to the maximum notches of the standard salary ranges attached to their ranks.

FINANCIAL AUTHORISATION

11. The expenditure involved in implementing the adjustments in accordance with this circular has been approved by the Treasury under reference SM 20/35/1 dated 22 September 1998. The provision of funds is subject to the provisions of Public Service Staff Code K.II/VI.

GENERAL

12. The translation of personnel, up to salary level 12 to the revised salary key scale, will be effected programmatically by PERSAL. In terms of the agreement the salary adjustments indicated on levels 13 and 14 (Annexure B) will only apply to those personnel who can be regarded as professionals. The possible salary adjustments of those personnel identified as being part of the management echelon will be concluded separately.

13. The salaries of professionals on levels 13 and 14 cannot be adjusted before a definition as to who can be regarded as professionals has been formulated. It will therefore be appreciated if you can, as a matter of urgency, provide inputs on this matter to this Department before or on 18 October 1998. The following possible criteria/matters can serve as guidelines for inputs in formulating a definition:

- Professionals are persons who must be registered with statutory bodies in order to perform their functions;
- Professionals are those persons whose professional duties attached to their job are significantly more than their managerial duties;
- Managers on salary levels 13 and 14 are those persons who normally have the titles "Director" and "Chief Director" attached to their posts; and

- Personnel should be consulted before deciding in which category their functions/duties fall and if necessary, they should be afforded the opportunity make a choice.

14. In respect of personnel referred to in paragraph 5, the necessary approval for the adjustments and for the expenditure involved therein, must be obtained from the authorities concerned and, where applicable, through the Department. The provisions of the Public Service Staff Code K.II/VI also apply in as far as the provision of funds is concerned, but with the necessary adjustments in the case of those institutions in respect of which a system of framework autonomy has been implemented/financing is effected by means of a formula (i.e. the institutions mentioned in paragraph 5(e) to (g)).

15. Departments/provincial administrations have to note that all available funds have already been committed to implement the adjustments referred to in this circular. It will therefore serve no purpose to approach this Department with requests for ad hoc adjustments.

16. It is possible that the measures in this circular may be erroneous or that errors may be made in the implementation of the measures. All officers and employees concerned should be informed in writing that errors will be rectified when they come to light and that any amounts that have been overpaid or underpaid because of errors will be adjusted.

17. Departments/provincial administrations are requested to ensure that the measures contained in this circular are implemented correctly. Should any problems be experienced with the implementation of the measures, departments/provincial administrations are welcome to approach this Department for assistance.

DIRECTOR-GENERAL

BYLAE X // ANNEXURE X

VLAK // LEVEL	SALARISREEKSE MET INGANG VAN 1 JULIE 1996 (RPJ) // SALARY RANGES WITH EFFECT FROM 1 JULY 1996 (RPA)				
1	17 100	-	17697	-	18 294
2	20 079	-	20 943	-	21 807
3	23 526	-	24 615	-	25 704
4	27 882	-	28 905	-	29 928
5	32 988	-	34 296	-	35 604
6	40 836	-	43 344	-	45 852
7	50 868	-	53 487	-	56 106
8	63 963	-	67 509	-	71 055
9	78 141	-	81 045	-	83 949
		-	86 853	-	89 757
10	98 463	-	102 702	-	106 941
11	115 413	-	123 468	-	131 523
12	139 578	-	147 474	-	155 370
13	163 260	-	170 373	-	177 486
14	191 712	-	202 056	-	212 400
15	233 079	-	244 833	-	256 587
16	303 591	-	317 898	-	332 205

rank / tion	Present salary scale	Future rank designation	Revised salary level/s	Promotion measures	Remarks
tional class: Registrar: Supreme Court					
r's Clerk	R14868 - 25056	Unchanged	2/3	Leg/Rank prom	St 3 - level 2, St 10 - level 3
istrar's Clerk	R24246 - 37719	Unchanged	4/5/6	Leg/Post prom	
r	R35085 - 48876	Unchanged	6/7	Leg promotion	
eg)	R54780 - 63474	Unchanged	8/9	Leg/Post prom	
Registrar	R68232 - 108360	Unchanged	10/11	Leg/Post prom	
egistrar	R100308 - 121932	Unchanged	12		
tional class: Master: Supreme Court					
Controller	R14868 - 25056	Unchanged	3	Rank promotion	
Estate Controller	R24246 - 37719	Unchanged	4/5	Leg/Rank prom	
l Estate Controller	R35085 - 48876	Unchanged	6/7	Leg/Rank prom	
state Controller	R54780 - 63474	Unchanged	8/9	Leg/Post prom	
t Master	R68232 - 108360	Unchanged	10/11	Leg/Post prom	
Master / Master	R100308 - 121932	Unchanged	12	Post promotion	
	R131478 (fixed)	Unchanged	13	Post promotion	
aster / Master	R148599 (fixed)	Unchanged	14		
tional class: Registrar: Deeds (Old designation: Deeds Controller)					
Controller	R14868 - 25056	Unchanged	3	Rank promotion	
Deeds Controller	R24246 - 37719	Unchanged	4/5	Leg/Rank prom	
eds Controller	R35085 - 48876	Unchanged	6/7	Leg/Post prom	
eeds Controller	R54780 - 63474	Unchanged	8/9	Leg/Post prom	
gistrar / Registrar	R68232 - 108360	Unchanged	10/11	Leg/Post prom	
gistrar / Registrar	R100308 - 121932	Unchanged	12	Post promotion	
r Deeds	R131478 (fixed)	Unchanged	13	Post promotion	
egisrar Deeds	R148599 (fixed)	Unchanged	14		

9. SALARY STRUCTURE GROUP: MANAGEMENT ECHELON

and equal grades	R131478 (fixed)	Unchanged ✓	13 ✓	Post promotion	
Attorney General	R131478 (fixed)	Unchanged	13	Post promotion	Levels 13/14 from 1 July 1997
irector and equal	R148599 (fixed)	Unchanged	14 ✓	Post promotion	
ttorney	R148599 (fixed)	Unchanged	14	Post promotion	Levels 14/15 from 1 July 1997
Director General	R183432 (fixed)	Unchanged	15 ✓	Post promotion	
r General	R266784 (fixed)	Unchanged	16 ✓	Post promotion	

10. SALARY STRUCTURE GROUP: MEDICAL PERSONNEL

Proposed

ational class: Medical Officer					
Medical)	R28500	Unchanged	7		
House Officer	R42972	Medical Officer	9		Combines with Medical Officer
l Officer	R50844 - 58716	Unchanged	9	Rank promotion	
Medical Officer	R63474 - 72990	Unchanged	10	Rank promotion	
al Medical Officer	R79086 - 96282	Unchanged	11	Post promotion	
Medical Officer	R88230 - 108360	Unchanged	12		
ational class: Dentist					
	R50844 - 58716	Unchanged	9 ✓	Rank promotion	
Dentist	R63474 - 72990	Unchanged	10 ✓	Rank promotion	
al Dentist	R79086 - 96282	Unchanged	11 ✓	Post promotion	
Dentist	R88230 - 108360	Unchanged	12 ✓		

ank on	Present salary scale	Future rank designation	Revised salary levels	Promotion measures	Remarks
onal class: Clinical Technologist					
Technologist	R16556-23436	Student Clin Technologist	3	Post requirement	
echnologist	R35085-42972	Unchanged	6	Rank promotion	
in Technologist	R42972-50844	Unchanged	7	Post promotion	Rank promotion from 1 July 1997
Technologist	R50844 - 58716	Senior Clin Technologist	7	Post promotion	Rank promotion from 1 July 1997
Technologist	R58716-68232	Unchanged	8	Post promotion	
lin Technologist	R70611-85182	Unchanged	9		Levels 9/10 from 1 July 1997
ional class: Medical Orthotist and Prosthetist					
d Orth - Prosthetist	R16556-23436	Student Med Orth - Pros	3	Post requirement	
and Prosthetist	R35085-42972	Unchanged	6	Rank promotion	
Orth - Prosthetist	R42972-50844	Unchanged	7	Post promotion	Rank promotion from 1 July 1997
Orth - Prosthetist	R50844 - 58716	Snr Med Orth - Prosth	7	Post promotion	Rank promotion from 1 July 1997
d Orth - Prosthetist	R58716-68232	Unchanged	8	Post promotion	
d Orth - Prosthetist	R70611-85182	Unchanged	9		Levels 9/10 from 1 July 1997
tional class: Optometrist					
rist	R35085-42972	Unchanged	6	Rank promotion	
Optometrist	R42972-50844	Unchanged	7		
SALARY STRUCTURE GROUP: MINING, OCCUPATIONAL AND AVIATION SAFETY PERSONNEL					
tional class: Air Traffic Controller					
Grade I	R21006-23436	Unchanged	3		
Grade II	R28500-32451	Unchanged	45	Rank promotion	
er: Grade I	R36402-42972	Unchanged	6	Rank promotion	
er: Grade II	R44940-50812	Unchanged	7	Rank promotion	
Controller	R54780-68232	Unchanged	8	Post promotion	
al Controller	R70611-85182	Unchanged	9	Post promotion	
ontroller	R79086-100308	Unchanged	10	Post promotion	
Air Traffic Control	R92256-112386		11		Levels 11/12 from 1 July 1997
ational classes: Inspector: Mining Machinery and Inspector: Mines					
int	R37719-50844	Unchanged	7	Post requirement	
tor	R58716-70611	Unchanged	8	Rank Promotion	
	R72980-85182	Unchanged	9	Rank Promotion	
	-	Principal (1st Leg)	10	Leg promotion	
	-	Principal (2nd Leg)	11	Post Promotion	
pal	R85182-112386	Deputy Director	12		
pational class: Inspector: Occupational Safety					
nspector	R16556-23436	Unchanged	3	Post requirement	
tor	R37719-50844	Unchanged	6	Rank Promotion	
Inspector	R50844-58716	Unchanged	7	Rank Promotion	
pal Inspector	R58716-70611	Unchanged	8	Post Promotion	
al Inspector	R72980-85182	Unchanged	9	Post Promotion	Levels 9/10 from 1 July 1997
y Director	R85182-112386	Unchanged	11		Levels 11/12 from 1 July 1997
pational class: Mine Surveyor					
Surveyor	R58716-70611	Unchanged	8	Rank Promotion	
r	R72980-85182	Unchanged	9	Post promotion	Levels 9/10 from 1 July 1997
ipal	R85182-112386	Unchanged	11		Levels 11/12 from 1 July 1997
pational classes: Aviation Accident Investigator and Airworthiness Inspector					
uction	R50844-58716	Unchanged	9	Rank Promotion	
r	R58716-70611	Unchanged	10	Rank Promotion	
pal	R72980-85182	Unchanged	11	Post promotion	
ty Director	R85182-112386	Unchanged	12		

rank / ition	Present salary scale	Future rank designation	Revised salary levels	Promotion measures	Remarks
itional classes: Agricultural Datametrical Technician, Agricultural Development Technician, Agricultural Product Technician, Limnological Technician, Nature Conservation Research Technician, Livestock Improvement Technician and Veterinary Technician					
echnician	R16586-23436	Student Technician	3	Post requirement	
ian	R35085-42972	Unchanged	6	Rank promotion	
Technician	R42972-50844	Unchanged	7	Rank promotion	
al Technician	R50844 - 58716	Senior Technician	7	Rank promotion	
echnician	R58716-68232	Unchanged	8		
ational classes: Analitic Chemistry Technician, Animal House Technician and Agricultural Technician					
echnician	R16586-23436	Student Technician	3	Post requirement	
cian	R35085-42972	Unchanged	6	Rank promotion	
Technician	R42972-50844	Unchanged	7	Post promotion	Rank promotion from 1 July 1997
al Technician	R50844 - 58716	Senior Technician	7	Post promotion	Rank promotion from 1 July 1997
Technician	R58716-68232	Unchanged	8		
ational classes: Forestry Research Technician, Community Agricultural Technician, Geohydrological Technician, Geotechn, Resource Conservation Inspector, Industrial Technician, Farm Manager and Meat Inspector					
echnician	R16586-23436	Student Technician	3	Post requirement	
cian	R35085-42972	Unchanged	6	Rank promotion	
Technician	R42972-50844	Unchanged	7	Post promotion	Rank promotion from 1 July 1997
al Technician	R50844 - 58716	Senior Technician	7	Post promotion	Rank promotion from 1 July 1997
Technician	R58716-68232	Unchanged	8	Post promotion	
l Technician	R70611-85182	Unchanged	9		Levels 9/10 from 1 July 1997
ational classes: Animal Health Technician, Vaccine Preparer, Plant and Quality Technician, Meteorological Instr Technician, Meteorological Technician, Works Inspector, Nature Conservator and Environmental Health Officer					
Technician	R16586-23436	Student Technician	3 ✓	Post requirement	
ician	R35085-42972	Unchanged	6 ✓	Rank promotion	
Technician	R42972-50844	Unchanged	7 ✓	Post promotion	Rank promotion from 1 July 1997
al Technician	R50844 - 58716	Senior Technician	7 ✓	Post promotion	Rank promotion from 1 July 1997
Technician	R58716-68232	Unchanged	8 ✓	Post promotion	
l	R70611-85182	Unchanged	9 ✓		Levels 9/10 from 1 July 1997
y Director	R85182-112386	Unchanged	11 ✓		Levels 11/12 from 1 July 1997
pational class: Medical Technologist					
Med Technologist	R16586-23436	Student Med Technologist	3	Post requirement	
al Technologist	R35085-42972	Unchanged	6	Rank promotion	
r Med Technologist	R42972-50844	Unchanged	7	Post promotion	Rank promotion from 1 July 1997
pal Med Technologist	R50844 - 58716	Senior Med Technologist	7	Post promotion	Rank promotion from 1 July 1997
Med Technologist	R58716-68232	Unchanged	8	Post promotion	
rol Med Technologist	R70611-85182	Unchanged	9	Post promotion	Levels 9/10 from 1 July 1997
ty Director	R85182-112386	Unchanged	11 ✓		Levels 11/12 from 1 July 1997
upational class: Medical Technical Officer					
Med Tech Officer	R16586-23436	Student Med Tech Officer	3	Post requirement	
cal Tech Officer	R35085-42972	Unchanged	6	Rank promotion	
Med Tech Officer	R42972-50844	Unchanged	7	Post promotion	Rank promotion from 1 July 1997
Med Tech Officer	R50844 - 58716	Snr Med Tech Officer	7	Post promotion	Rank promotion from 1 July 1997
f Med Tech Officer	R58716-68232	Unchanged	8		
upational class: Dental Technician					
l Dental Technician	R16586-23436	Student Dental Technician	3 ✓	Post requirement	
tal Technician	R35085-42972	Unchanged	6 ✓	Rank promotion	
or Dental Technician	R42972-50844	Unchanged	7 ✓	Post promotion	Rank promotion from 1 July 1997
Dental Technician	R50844 - 58716	Senior Dental Technician	7 ✓	Post promotion	Rank promotion from 1 July 1997
f Dental Technician	R58716-68232	Unchanged	8 ✓	Post promotion	
trol Dental Technician	R70611-85182	Unchanged	9 ✓		Levels 9/10 from 1 July 1997

ANNEXURE "E"

AUTHORISATION LETTER

Republic of South Africa

Deputy Director General for Health and Developmental Social Welfare
NORTH WEST PROVINCE

9 February 1999,

Private Bag X2068
Mmabatho
2735

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Mr Pakiso Mothupi

North West Development Corporation

P.O. Box 6708, Mmabatho 2745

Dear Mr Mothupi,

RE: PERMISSION TO CONDUCT RESEARCH IN THE NORTH WEST PROVINCE

The Departmental Research Committee recently reviewed your research proposal entitled ***Implementation considerationsfor activity based cost systems in service firms*** (ref Feb-99/1) and wishes to inform you that permission has been granted for you to conduct your study, subject to the following conditions:

i. the Ethics/Research Review Committee of your academic institution has approved your proposal,

ii. the Department will not be responsible for any costs associated with the research project,

iii. that on completion of the research project, a copy of your research report (or dissertation or thesis) will be submitted to the Department.

Attached are comments on your proposal and we hope that you will incorporate them to enrich your study. Any enquiries regarding your study should be addressed to Mr Caesar Vundule tel. (018) 3875213.

Yours sincerely,

M.C. NTOANE
Deputy Director General

P O Box 6708
Mmabatho
2735

05 February 1999

)eputy Director General
)epartment of Health & Developmental Soc. Welfare
:irelo Building
Mafikeng
745

)ear Mr Vundule

RE: REQUEST TO CONDUCT A RESEARCH

I am an MBA student at Potchefstroom for Christian Higher Education University. Part of my curriculum is to conduct a research as per attached proposal.

I have identified Mafikeng Provincial Hospital as the suitable institution for such a research. Thus your kind approval is sought.

Yours faithfully

PAKISO MOTHUPI