THE IMPACT OF FISCAL DECENTRALISATION REFORM ON HOSPITAL EFFICIENCY: THE CASE OF KENYA

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DECLARATION

This research paper is my original work and has not been submitted for any academic and/or examination purposes at any other university.

Signed by candidate

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This research paper has been submitted for examination with my approval as the university supervisor.

Professor Di McIntyre

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LIST OF ABBREVIATIONS

AIEs	Authority to Incur Expenditure
ALOS	Average Length of Stay
BOR	Bed Occupancy Rate
CRS	Constant Returns to Scale
DMU	Decision Making Unit
DEA	Data Envelopment Analysis
DEAP	Data Envelopment Analysis Programme
DHMBs	District Health Management Boards
DHMTs	District Health Management Teams
DRS	Decreasing Returns to Scale
FY	Fiscal Year
GOK	Government of Kenya
HCFD	Health Care Financing Division
HIS	Health Information System
IRS	Increasing Returns to Scale
MoH	Ministry of Health
MLE	Maximum Likelihood Estimation
MSCU	Medical Supplies Co-ordinating Unit
NGOs	Non-Governmental Organisations
NHSSP	National Health Strategic Plan

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Abstract

Many developing countries have or are in the process of implementing decentralisation of financial management systems. The reform can take various forms: self-financing or cost recovery through user charges and co-financing or expansion of local revenue through taxation. This study examines the impact of decentralisation of fiscal/financial management of cost sharing revenue on hospital efficiency.

Potentially, decentralisation of financial management of cost sharing is expected to improve coverage and accessibility of health services, quality of services and efficiency in the delivery of health care.

The main aim of this study was to review the impact of fiscal decentralisation of the cost sharing reform on the efficiency of Kenya's health care delivery and to identify factors that need to be addressed in order to enhance the success of the reform policy.

The study utilised secondary and primary data from 39 public health facilities comprising of 27 district hospitals and 12 sub-district hospitals. The sample size for the primary data collection was 178 patients and 57 health workers from 4 purposively selected facilities.

Secondary data (inpatient and outpatient annual utilisation rates, recurrent expenditure, number of beds in each facility and cost sharing revenue) was used in the input-output Data Envelopment Analysis (DEA) Model to generate efficiency levels for each facility. The primary data was used to examine how fiscal decentralisation may have impacted on service utilisation, and perceived quality of care.

The DEA efficiency scores were used to run a censored Tobit regression model, where the dependent variable was technical efficiency scores. The independent variables included a fiscal decentralisation dummy variable, medical staff, non-medical staff, bed occupancy rate (BOR), average length of stay (ALOS) and number of beds (used as a proxy for hospital capacity).

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Major findings from the study reveal that:

- Utilisation of health care services, perceived quality of services, access and revenue collection (cost recovery ratio) have not improved. The failure is largely attributed to the structure of the financial management system which does not provide incentives to the health managers or authority and autonomy over the revenue expenditure, inefficient district treasury, and unavailability of certain health care inputs (particularly drugs).

- Efficiency in health care facilities was lower in the post-reform period compared to the pre-reform period. The average efficiency level for 1994, 1995 was 62.5% and 63% respectively whilst that of 1997 and 1998 was 59% and 55% respectively, implying that these facilities are using more resources or inputs and could lower their costs and still achieve the current levels of output. Facilities could therefore make savings if the available resources are utilised efficiently.

- Significant gains from the reform policy could be realised by granting more expenditure responsibilities and autonomy in financial management to health care managers as well as addressing other factors that negatively impact on efficiency.

- Fiscal decentralisation of cost sharing revenue by itself cannot increase efficiency. For it to achieve the stated objectives it needs to be supported by other initiatives.

- The study recommends the need to establish specific policies to address inefficiency in the health sector. This requires that some benchmarks be explored using indicators drawn from health facility inputs and outputs. This will form the basis for monitoring efficiency. The instruments and or tools will also enable health managers to identify the sources of inefficiency as well as the areas which present the greatest opportunity for real improvements in health care delivery.

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Finally, "to those who have fellowship with God, have kindness and compassion for one another" 1 Phillipians 2: 1-11.

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INTRODUCTION

1.1 RESEARCH PROBLEM:

Since independence in 1963, Kenya's public health sector operated in a decentralized manner until the early 1970s when the government centralized management and authority over the sector (Cohen *et al* 1995). This was associated with the government's policy to ensure free access to health care for all users. However, serious economic problems and demographic pressures and subsequent implementation of structural adjustment programmes has had a severe impact on financing for the health sector (Collins *et.al* 1996; GOK, 1995a). Decreasing recurrent expenditure in health increased demand for health services and complex epidemiological problems led to a renewed health sector decentralisation reform strategy in Kenya.

The introduction and implementation of cost-sharing in government health facilities in December 1989, which was meant to improve efficiency, quality, access and equity in health care delivery, did not bring any significant improvements (Collins *et.al* 1996; Cohen *et.al* 1995; GOK 1995a). The deteriorating conditions in public sector health facilities, characterised by lack of curative patient care items such as drugs and laboratory reagents, poorly maintained medical equipment and buildings and congestion, persisted. In response to these problems, the government decentralized financial management of the cost-sharing programme. The decentralized financial management with regard to cost-recovery was meant to facilitate the use of revenue in a way that meets locally determined health service needs, leads to improved efficiency, quality and access to health care services (GOK 1995a; MOH 1999; Kireria *et.al* 1999).

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While decentralized financial management or decentralisation in general is expected to improve efficiency, access and quality of care, in practice, the desired policy objectives may not be achieved (Mills *et al.*, 1990, WHO 1996). Ineffective forms of decentralisation can lead to fragmentation of health care services (Kutzin 1995). Moreover, the transfer of authority, resources and functions from Ministry of Health to district health facilities may not necessarily achieve the decentralisation objectives (which are efficiency, equity, access and quality of health service) unless accompanied by complementary support services (Kutzin 1995; Thomson *et al.*, 1991; Cassels 1995).

Although health planners and policy makers hold strong beliefs about the policy with respect to its effects on the dynamic technical efficiency and allocative efficiency, access and equity aspects, there is little or no evidence bearing on these propositions. Studies that have been conducted do not address the impact of decentralized financial management on efficiency of health care facilities. Neither has the level of savings as a result of implied efficiency improvements been ascertained (MOH, 1999; Owino *et al* 1999; Cohen *et al.*, 1995). Equally missing is any specific individual country study that examines the implications of fiscal decentralisation on technical efficiency and health care provision.

These issues are important decision inputs in trying to establish if there is any effect of policy changes on delivery of health care. Needless to add, it is important to obtain insights into how the facilities are performing under the decentralized cost sharing revenue and for proposing ways in which facility performance could be enhanced and

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4. Consider policy implications emerging from this evaluation

1.2.3 Hypothesis of the dissertation

To guide this study in arriving at meaningful results, the following null hypotheses will be tested

- Decentralisation of financial management of the cost-sharing programme has not improved technical efficiency, access and quality of service provision
- There is no significant difference in efficiency among public health facilities before and after decentralisation of financial management of cost revenue sharing expenditure and control.

1.2.4 Justification for the Study

Kenya like most developing countries has immense potential for enhancing health sector efficiency, equity, access and quality of service provision both in the short and long run. Currently, relatively little information exists on the impact of decentralized financial management of the cost-recovery, particularly with regard to efficiency and the implications of promoting decentralisation of planning. In addition, not much has been explored with regard to the financial management system under the cost sharing scheme and its impact on ensuring financial sustainability, coverage, and access to health care. Therefore, any attempt to study fiscal decentralisation represents a veritable source of improved decision making in relation to implementation of health sector reforms and more so on the delivery of health care services.

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Quite often, health sector reforms have been implemented with little consideration for assessing their implications for service delivery (Kutzin 1994); yet this information is critical for the success of the reform. In most developing countries, there is a conspicuous absence of evaluation of health sector reform. In Kenya, there is limited knowledge about the nature of financial management reform policy, its effectiveness in enhancing efficiency, the amount of saving levels arising from improved efficiency if any or about the factors that hinder or influence the strategy's effectiveness (Kireria *et.al* 1999; MOH 1999). This study seeks to contribute to the decentralization reform policy debate by assessing the available evidence on this reform initiative.

Decentralisation of financial management has major policy implications because it is not only meant to improve the performance of the cost-sharing programme, but also to affect coverage, access equity and quality of health care services. Needless to add, information on the performance of this reform strategy would provide guidance on how the health sector could be reorganized to promote efficiency. This information informs important policy issues as there are moves to decentralize the entire health sector including the release of Block grants and treasury allocations to the health facilities (GOK 1995a, Kireria *et.al* 1999). Further, an evaluation of decentralisation is important for the following reasons: It is only by evaluating the impact of the fiscal decentralisation reform that one can explore hypotheses concerning the efficiency differentials in health facility performance

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The ability to quantify efficiency levels of health facilities would provide decision-makers, hospital managers and health planners with tools for monitoring the performance of the facilities in terms of resource use and management. In some cases, theory provides no guidance concerning the impact of health sector reform on facility performance. In such a situation, empirical evaluation provides useful qualitative and quantitative evidence (Cassels, 1995). Thus, there is a need to undertake this study to illuminate the implications of financial decentralisation on health facility efficiency and the factors influencing its success as a guide to policy design, formulation and implementation.

1.2.5 Organisation of the remaining chapters

Chapter 2 gives the definition of various key concepts relevant to this study, a brief overview of different types of decentralisation and circumstances under which each of them is implemented, or degree of autonomy in fiscal management and control. It then discuses the main findings of fiscal decentralisation and decentralisation in general, and highlights the limitations and/or the factors that need to be put in place if the reform policy is to achieve the stated objectives. Background and implementation of financial management reform in Kenya is also provided in this chapter. Finally, the chapter discusses the conceptual framework used in the study. It discusses approaches for evaluating efficiency, access and quality of services.

Chapter 3 focuses on the field methodology of the study. The chapter describes the study design, sampling method and sample size, the nature, source and type of data. It also discusses reliability and validity of interview instruments, ethical issues, data analysis,

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management and quality assurance. Finally, the chapter discusses the limitations of the study.

In chapter 4, the results of the study are presented. Description and explanation of the results is presented in this chapter. This includes descriptive statistics, Data Envelopment Analysis (DEA) efficiency levels and regression results.

Chapter 5 analyses the results presented in chapter 4. Basically, it examines the extent to which the study objectives have been realised. Ways of improving the success of the reform in Kenya's health delivery system are also addressed.

Lastly, chapter 6 provides a summary of the key findings of the study with reference to efficiency, quality and objectives of decentralisation of financial management of cost sharing. Finally, the chapter provides suggestions for further research.

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CHAPTER 2: REVIEW OF LITERATURE

2.1.1 Introduction

Decentralisation has been a key part of many developing countries' reform agenda, although it has been pursued to different degrees and in different ways (Bennett 1998). However, to date, there are many contradictions and arguments regarding its effect, its overt and hidden costs, the tradeoff between the costs and potential saving, and requirements for successful implementation (Munar 1997, Kutzin 1995). Besides, few studies have attempted to evaluate its impact on the policy objectives. Thus, relatively little is known about the effectiveness of the fiscal or financial decentralisation reform, its impact on hospital efficiency, delivery of health care, and the conditions required to ensure its successful implementation.

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2.1.2 Structure of literature review

Before reviewing the literature on decentralisation, it is important to examine the meaning of certain concepts used in the dissertation. Section 2.2 presents the definitions of various key concepts relevant to this study, namely decentralisation, fiscal decentralisation, cost sharing, efficiency, equity, access and quality of care. Section 2.3 provides a brief overview of different types of decentralisation, namely deconcentration, devolution, delegation and privatization. It discusses the circumstances under which each of these forms is implemented and, or the degree of autonomy in fiscal management and control.

Section 2.4 presents other relevant literature as well as background and implementation of financial management reform under the cost sharing programme in Kenya. Section 2.5 discusses the conceptual framework used in this study.

2.2 Meaning of decentralisation

Decentralization refers to the transfer of authority or dispersal of power in planning, management and decision-making from the national level to the sub-national levels (Mills *et al.*, 1990; Rondinelli *et al.*, 1983; WHO 1993; Litvack *et.al.* 1998). The concept is complex and can take a variety of forms depending on a country's political administrative structure, objectives for decentralization and organizational structure of the health system (Alam *et al* 1994, Cassels 1995, Reagon *et al* 1997, Mills *et al.* 1990, Litvack *et al* 1998). The commonly known forms of decentralisation include; deconcentration, devolution and delegation. In each case however, significant authority and responsibility is retained by the central government, particularly in relation to functional responsibility, regulation, policy making, coordinating and monitoring roles (Bennett 1998).

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2.2.1 Deconcentration

This is the most common type of decentralisation and is characterised by transfer of specific functions to sub-national units within ministries or other sector specific agencies. It involves the transfer of administrative rather than political power to one or more levels of government. In this model, lower levels will have fairly limited power of decision-making and little influence over allocation of resources. The lower levels of

administration are accountable upwards to the central government offices. This form of decentralisation is aimed at strengthening the district level management bodies such as health management boards. The branch offices are expected to improve the efficiency and effectiveness of service delivery (Brijlal *et al.* 1998). In Kenya, a notable example is the district health management teams (DHMTs) that have been established to deal with operational activities specifically in the areas of health prevention, supportive supervision, production and the provision of services within the framework of a primary or basic level of care (Munar 1997). The local administrative offices are accountable to the central government. In terms of autonomy in fiscal management and control, some degree of autonomy in decision-making authority may be delegated but they rarely have full responsibility for these functions.

2.2.2 Delegation

Under delegation government transfers responsibilities for decision making and administration of public functions over certain areas of the government to semi-autonomous organizations that are not wholly controlled by the central government but only indirectly controlled by it. Although the central government retains authority over some services as well as policy regulations, the delegated agencies are accountable to central government, but they have a great deal of discretion in decision-making. Hospital Boards of Parastatals or teaching hospitals offer the best example for this form of decentralization. The degree of autonomy of the corporation is usually legally established.

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policy initiatives (Cohen *et.al* 1995). The major policy streams are (1) decentralisation to lower levels of the government administration across all sectors of the economy in 1983; the district focus for rural development; (2) decentralisation to lower levels of the Ministry of Health Administration; the District Health Management Teams, 1975-79 and (3) the creation of District Health Management Boards in 1992 to oversee the revenue collection and supportive supervision of cost sharing programme among others. The decentralisation of financial management of the cost sharing revenue falls under this stream.

The minor streams are (1) creation of autonomous institutions: Kenyatta National Hospital, (2) the Bamako initiative, a community based health financing mechanism introduced in 1989 by the MOH and UNICEF for promoting primary health care services and (3) decentralisation to private health care providers (for-profit and not-for-profit providers). The last three streams have had very minimal impact in influencing the decentralisation process in Kenya.

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2.2.6 Fiscal or financial decentralisation

Financial[1] decentralisation is a core component of decentralisation (Zhang and Zou 1997). It refers to the transfer of revenue raising, management and control and expenditure responsibilities to the lower levels of government. In relation to cost sharing,

[1] In this study fiscal decentralisation is used to refer to the decentralisation of financial management of the cost sharing revenue in the health sector. In essence therefore, what we have in Kenya is "partial fiscal decentralisation" of the revenue expenditure as opposed to a comprehensive fiscal decentralisation which grants complete autonomy in so far as the revenue collection and spending is concerned. The primary concern of the study is therefore on decentralisation of cost-sharing revenue expenditure in the health sector and its influence on the health sector efficiency in the delivery of health care. Caution should therefore be exercised when interpreting financial/fiscal decentralisation in the context of this study.

it refers to the shifting of responsibilities for decision making about the collection and expenditure of revenues to the district (WHO 1995). It can take various forms including, self-financing or cost recovery through user charges, co-financing, or expansion of local revenues through taxation or community funding. It is meant to improve quality of service. access and efficiency by creating more accountability to local governance structures, greater consumer involvement and increased community participation. The degree of autonomy of the district in revenue collection and control is important in determining the extent of fiscal or financial decentralisation in the health sector. This study is concerned with the decentralisation of financial management system under the cost-sharing scheme. The current system could thus be equated to "partial fiscal decentralisation". The results should therefore be interpreted taking this information into account.

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2.2.7 Cost sharing in the context of health care delivery

This refers to the user fees paid by consumers of public health services at the point and time of receiving health care services (Beattie *et al.*, 1996: pp. 9). It is supported on the grounds of its potential of achieving allocative efficiency through the reallocation of additional resources generated and on technical efficiency through the purchasing of inputs e.g. drugs, equipment, maintenance and other essential inputs (Gilson and Mills 1995 pp. 283). In addition, it is expected to improve quality of health services and/or equity in service delivery and dissuade unnecessary use of health services. However, there is considerable debate in the literature as to whether these potential benefits of cost sharing are actually achieved.

Combined, the two measures provide a measure of total economic efficiency. Thus, a hospital is said to be technically inefficient if it could have produced the same amount and quality of patient care with fewer resources than it consumed. Alternatively, it could have produced the maximum amount of output with the same amount of resources it used (Sherman 1984). This study concentrates on the impact of fiscal decentralisation of the cost sharing revenue on technical efficiency due to inaccessibility of input prices.

2.2.11 Access to health services

Reagon *et al.*, (1997) define access in terms of the range of available quality services. Access is closely linked to utilisation levels and is affected by perceived quality of services, cost of services (fees, travel cost, other treatment costs, formal barriers e.g. user fees policy, exemption policies, geographical and physical barriers (Braveman 1998)

2.2.12 Utilisation of health services

According to Braveman (1998), utilisation of health care services refers to the actual receipt of services or the actual coverage of the population with services, in addition to the availability of services. The measurement of actual utilisation of health services is important because it helps determine whether health care is actually delivered and used. In the context of this study, it will help establish whether notable changes in health care utilisation rates has occurred as a result of decentralisation of financial management reform. According to Reagon *et al.* (1997), utilisation is influenced by multiple factors related to demand and supply.

2.3 BROAD OBJECTIVES OF DECENTRALISATION/FISCAL DECENTRALISATION

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2.3.1 Objectives in the context of health care delivery and financing

Many developing countries have or are in the process of implementing decentralisation and in particular, decentralized decision-making in financial management matters. Numerous international experiences and discussions on fiscal decentralisation or decentralisation in general have advanced a number of arguments, both for and against the policy. Firstly, fiscal decentralisation or decentralisation in general is supported on the assumption that it would lead to improved efficiency, equity and access to health care services that arise from taking resources closer to people or implementing financial management policy reform within district health facilities. This is based on the fact that decisions about expenditure taken at the local level are more likely to reflect the demands of the local community. Secondly, it may reduce bureaucracy and as a result, make the central government and health administration more flexible, accountable, and responsive to local needs. Thirdly, it is pursued to achieve political objectives such as political stability, increased government responsiveness to the needs of different interest groups, mobilizing support for national development programs and encouraging self reliance among subordinate units of administration (Litvack 1998; Kutzin 1995; WHO 1996; Berman 1995; Reagon *et al.*, 1997; Kolehmainen-Aitken and Newbrander 1997).

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According to WHO (1995), decentralisation within the health sector is introduced in pursuit of following objectives; to improve management of service delivery, strengthen performance of public health facilities and address resource shortages and inefficiencies of the centralized system through local resource mobilization and cost containment (WHO 1995). Further, by separating the twin objectives of efficiency and equity,

decentralisation could allow service providers to charge user fees and focus on efficiency and use the revenue to expand coverage and improve equity, which can benefit the poor (Litvack *et.al* 1998:111). They note that, quality in the delivery of service can be achieved if all or significant responsibility and autonomy in planning and management of human and financial resources for the health facilities are given to facility managers. In this way, hospital (or other health facility) managers will be able to acquire the necessary inputs e.g. drugs, equipment and staff.

2.4 LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

This section provides a review of studies on the impact of financial management on hospital efficiency, studies on the approaches of efficiency measurement and the experience of decentralisation in general in various countries. On the basis of this, the section presents and discusses the analytical framework used in this study.

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2.4.1 Review of Related Studies

For much of the last one decade, health policy makers have been concerned with the performance of their health systems and many developing countries have introduced reforms aimed at improving performance (Kutzin 1995; Collins *et.al* 1999; World Bank 1994; Brijlal *et.al* 1998). Some of the reforms being implemented across sub-Saharan Africa (SSA) relate to decentralisation of decision making to health districts (e.g. decentralisation of financial management), health care financing and public/private mix.

The debate on the impact of decentralisation of financial management or decentralisation in general is a new phenomenon in most developing countries. In the debate, while there is more consensus on the potential of the reform effect on efficiency and quality issues, there is considerable uncertainty about its influence on hospital efficiency in the delivery of health services (Kutzin 1995; Mills *et.al.* 1990; WHO 1996). An understanding of these issues requires an in-depth examination of health facility performance and productivity enhancing measures to promote the success of the reform.

Available empirical evidence suggests that decentralisation in general may enhance efficiency, lead to macroeconomic stability and institutional demands on the decentralised units. Zhang and Zou (1997), argues that fiscal decentralisation may lead to hospital efficiency in service delivery by moving decision making closer to service delivery point. This is necessary, as it would create local governance structures accountable to the users of public health services. Litvack *et.al* (1998) has argued, without empirical corroboration, that in order to enhance efficiency in the delivery of health care services, it is imperative to match fiscal decentralisation and administrative arrangements. Gilson and others (1995), Beatie *et.al* (1996) have argued that decentralisation of user fee collection may have a positive impact on technical efficiency if the revenue collected is used to finance the purchase of inputs (drugs, equipment or in the rehabilitation of facilities). They further observe that access can be improved through improved waiver and exemption mechanisms. These arguments notwithstanding, there is conflicting evidence as to the relationship between decentralisation and efficiency, in particular with regard to revenue generation. The contention then is that, for fiscal

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decentralisation to be effective, the reform should enable providers to focus on efficiency and then use the revenue to expand coverage or improve quality.

More recently, the issue of the impact of fiscal decentralisation has been awakened by continued wide spread inefficiencies in public health facilities despite decentralized decision making to the district level. Litvack (1998) notes that the success of fiscal/financial decentralisation requires a comprehensive approach, rather than a one-off piecemeal reform such as cost recovery. This implies that fiscal decentralisation should take account of managerial capacity, resource management and other systems change that help capture the efficiency gains that are at the heart of fiscal decentralisation. This may mean training local personnel in planning, resource allocation and utilization management in order to enhance both allocative and technical efficiency and effectiveness of the health care delivery system.

Reagon *et al.* (1997) suggest that the decentralisation of financial management within a decentralized management structure must carefully consider certain principles of financial management in order to enhance efficiency, equity and quality of health care provision. It is in this connection that they identify some specific issues in ensuring success of the decentralized financial reform. These include the following:

- Decentralisation with authority for financial control at the decentralised administrative structures at the lower levels
- Efficient and effective budgetary allocation in order to ensure proper use of resources to achieve maximum health gains at the lowest costs

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- Financial allocations that promote equity in the distribution of health services
- Strengthening the role of communities in decision making in order to attain district health goals

The principle that is of key importance to this study is the decentralisation of financial management and expenditure control and its implications for technical efficiency.

Cohen *et al.*, (1995), in a study on Kenya's experience with decentralisation for the period between 1983/84 to 1989/90, found that decentralisation resulted in a sharp increase in administrative costs and a decline in utilisation levels. Taking the expenditure/output ratio as an indicator for efficiency, they found a marked increase in cost/output ratio implying a decline in efficiency. No attempt however, was made to examine the impact of fiscal decentralisation on efficiency and health care delivery. The study was undertaken before the decentralisation of financial management systems. However, the study provides some insights about the effects of decentralisation on hospital performance. For instance, the increase in costs may be associated with a decline in efficiency. Further, the study coincided with the implementation of the cost-sharing programme, hence the observed responses may partly be attributable to increased costs of implementing cost-sharing scheme. The findings tie with comprehensive studies of the impact of cost sharing on utilisation rates. It should however, be noted that the policy reform may not necessarily be associated with the changes in efficiency and utilisation and causality was not established in this study. Caution should therefore be exercised in the interpretation of these results.

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In a budgetary analysis study to examine ways of enhancing efficiency in resource allocation and health care delivery, Kireria *et al.,* (1999), observed that decentralisation of budget allocations has the potential to reduce facility costs on travel because authority to incur expenditure (AIEs) will be done at the district level. The study notes that most facilities spend a larger portion of the revenue collected on travel costs. Decentralisation of financial management would therefore led to savings. Further, it would provide more time for the health managers to engage in policy analysis and formulation, and finally improve efficiency in the financial performance of the health facilities. A key policy issue that arises however, is the potential conflict between achieving financial sustainability on one hand, and ensuring efficiency, quality and equity in health care delivery on the other. This is basically because there is a tendency of health managers to concentrate on improving revenue collected at the expense of the other policy objectives. Thus, implementation of decentralisation, including the decentralisation of planning, budgeting and financial management should be promoted in a way that ensures the achievement of the multiple objectives of financial sustainability, improved efficiency and equity. The conclusion then is that, the decentralisation reform strategy should focus more on the optimal use of resources at the district level and prioritize activities at the national level in a way that would address the multiple objectives.

Several of the more recent studies (Collins *et al.*, 1996; Beattie *et al.*, 1996; World Bank 1994; Russell and Gilson 1995) have argued, that perverse incentives introduced with cost recovery schemes are responsible for poor delivery of service by health facilities. In addition, empirical evidence shows that the failure to achieve efficiency goals arises from

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low efficiency in collecting revenue and the failure to match revenue generating objectives on one hand and access to services on the other hand.

Kutzin (1995) further demonstrates that wide spread waste of resources, especially in drug procurement, storage and in prescription and low productivity implies that only a small percentage of the revenue retained is used in enhancing facility performance. He notes that, the extent of decentralisation of financial management (that is, the organization and managerial context in which they are applied), critically determines the effectiveness of user fees in achieving its objectives. The main conclusion from the study was that, the success of financial reform in addressing inefficiency, equity and quality issues largely depends on active participation of the ministry of health in the financing, organization and regulation of the decentralized administrative units.

Kolehmainen-Aitken and Newbrander (1997) and Cohen *et.al* (1995) have shown that the reluctance by the central administration to relinquish the control of funds or release sufficient funds that meet the demands of the new responsibilities can greatly undermine the potential value of user fees. According to Shar (1997), decentralisation can and should be given greater weight to ensure that local mobilization is maintained and that local institutions are capable of carrying out the corresponding expenditure responsibilities. Mills (1994) further points out that efficiency in health care delivery may be compromised by financial decentralisation of revenue use and collection because the economies of scale that existed prior to decentralisation may be compromised upon implementation. While this may be true, it should be noted, however, that,

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1992/93-1997/98. Level 1 hospitals were found to have higher technical efficiency scores compared to level 2 or 3. The range of overall level of technical inefficiency for the three levels of hospitals examined was 35.1 to 46.8 per cent. Most of the hospitals in the sample were found to be operating below the best-observed frontier with only 12.8 per cent of the hospitals reported to be efficient compared to their peers. Bed occupancy and *ALOS* variables were negatively related to hospital inefficiency. Based on the above results, the author concluded that significant amount of savings could be realised if the health facilities were operating at efficiency levels.

Jacobs (2000) compared efficiency rankings from cost indices derived from a deterministic regression (CCI, 2CCI and 3CCI) and those obtained from DEA and Stochastic Frontier Analysis (SCF). The results showed that there was a marked difference in trust efficiencies between DEA and the cost indices. Comparison of SCF and DEA methods showed a higher consistency in the efficiency rankings. The interpretation of these results should be treated with caution because of existence of inconsistency across the different approaches. The presence of random 'noise' however, makes the author to conclude that the large discrepancy in efficiency between the trusts may be much lower than is reported. Despite the inconsistent of the results, the author notes that, the two approaches do have some agreement within specifications and may complement one another. In a related study, Banker *et.al* (1986) showed that with translog methods, the hospitals exhibited CRS, whereas the DEA results showed both increasing (IRS) and decreasing returns (DRS) to scale. Comparison of estimates of technical efficiencies generated from the two methods showed that DEA estimates were

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highly related to the capacity utilisation, but the estimates from the translog specification did not show such relationship.

A study by Gerdtham *et .al* (1999) estimates the impact of internal market reform on hospital efficiency. They compared county councils, which had decentralised their internal resource allocation system into a comprehensive system of internal markets, with other councils still relying on the traditional budget system. The new reform was aimed at introducing a new set of incentives for the publicly owned health care facilities to use available resources more efficiently. The findings show that the councils that changed their internal resource allocation into an output-based reimbursement system had higher efficiency scores, whilst efficiency in hospitals prior to the reform did not differ between the county council hospitals which implemented internal markets with output-based reimbursement and those which did not. The difference in efficiency is attributed to financing reforms. Other factors influencing efficiency e.g. waiting time for operations and other reforms introduced during the same time were found to have little effect because they were implemented simultaneously in all the county council hospitals. A similar study by Fare *et. al* (1995) on productivity change in Swedish hospitals during the reform period reported similar findings. Using DEA-based *Malmquist productivity indices*, the results show that productivity efficiency of hospitals declined during the pre-reform period.

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2.4.3 Kenya's experience with user fees and decentralisation

Health care decentralisation in Kenya arises from a combination of demographic and economic pressures. Increased demand for quality health services and poor economic performance has limited the government's capacity to provide health services of acceptable quality. In Kenya, the decentralisation of cost sharing revenue expenditure in public health sector is expected to strengthen and empower districts and individual public heath facilities in order for them to develop, manage and build capacities in modern management and planning (GOK 1995a; Kireria *et.al* 1999; Owino and Korir 1997). Ultimately, it should lead to increase in coverage and accessibility of health services through optimal resource utilisation at the district level since it implies closer interaction between provider and consumers of health care at the community level.

The implementation of the district focus for rural development in the early 1970s laid the foundation for decentralisation in Kenya, which was extended, to the health sector. With regard to the Ministry of Health, it was meant to strengthen the management capacities of health facilities at the district level. In 1992 districts were given more responsibilities and authority in decision making with the creation of the District Health Management Boards with a view to manage the district health facilities (Cohen *et.al* 1995). Specifically, they were meant to oversee the collection and use of the cost sharing revenue, and ensure increased cost effectiveness and efficiency in service delivery (MOH 1996).

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2.4.4 Introduction and Implementation of financial management reform

Cost-sharing in Kenya's public health sector was promulgated in the 1984/88 National Development plan, reiterated in policy documents, and implemented in 1989 (Collins *et al.*, 1994; Kireria *et.al* 1999). Before 1994, the cost sharing revenue was characterised by centralized revenue collection and centralized fiscal transfers, that is, the user fees were remitted to treasury and allocated back to the health facilities according to prescribed expenditure needs. Its management was entrusted with the health care financing division at the Ministry of Health Headquarters. The main objective of the policy was to generate additional revenue at facilities from users of public health facilities which should then be utilised for improving efficiency, quality and access to health care (ibid.). Service delivery efficiency was to be improved by creating savings through the elimination of excess staff, and other improvements in the use of health resources by using efficiency savings together with cost sharing to increase the provision of health care (Quick and Musau 1994).

A task force was set up to oversee the collection and effective use of the revenue generated from cost-sharing, strengthen implementation, approve expenditure plans, monitor progress, supervise and deal with the many problems of misunderstanding and mismanagement in the public health facilities (MOH 1994). Needless to say, such a heavy workload on the central staff (which was understaffed and under funded), meant that the technical staff could not cope (Stover *et al* 1996; MOH 1999; Owino 1997). For instance, routine supervision, training and monitoring ground to a halt, and management

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was essentially conducted through circulars and rescue missions to the field whenever major problems were reported (Quick 1995).

However, as patients paid more, conditions in the public facilities continued to deteriorate despite the introduction of the cost-recovery policy. The facilities could not obtain the essential inputs on time ostensibly because it took too much time for the central administration to approve the budget plans or authority to incur expenditure (AIEs). As a result most facilities lacked essential drugs and laboratory reagents, had poorly maintained medical equipment, and low staff morale and congestion persisted (Owino *et al.*, 1997; Quick 1995). Evidence of long queues, long waiting lists for admission at the referral hospitals, long stays in hospital, poor diagnosis and treatment became common (ibid.)

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Against this background, the decision to decentralise management of cost-recovery revenue generated at the facility to the district level received heightened attention (MOH, 1994 and MOH 1999). The new system was first implemented on a pilot basis in three provinces namely: Western Province in June 1994, and the Coast and Eastern Province in February and July 1996. Respectively, the pilot tests lasted for five months, after which the programme was introduced in other Provinces. At the top of the agenda was the transfer of financial management with respect to cost recovery, to be followed by the release of "*block grants*" to the district, which were meant to replace the inflexible ministry's line item budgets. The district health management teams and boards (DHMTs and DHMBs) were meant to undertake the following main responsibilities:

- To support and oversee the revenue collection and supervision of the cost sharing program
- Enhance authority in financial management with emphasis on the issuance of AIEs
- Monitor, evaluate and regulate the quality and standard of health care delivery at the district level
- Approval of expenditure plans and issuance of sub-authority to incur expenses
- Training of DHMBs/DHMTs and submission of routine district and provincial financial reports.

All these functions were meant to improve efficiency, access and quality in the provision of health care at the public health facilities. Further, it was hoped that financial decentralisation would provide the most appropriate way to spend the cost sharing funds (Collins 1995) However, the health care financing division within the ministry headquarters retained responsibility for developing policies, supervision, and monitoring of progress in addition to liasing with other stakeholders. The most basic economic argument in favour of financial decentralisation has to do with the notion of efficiency savings. It is evident from the framework that decentralized fiscal reform could be equated with devolution as authority was transferred to autonomous and independent units in the form of DHMBs/DHMTs, while Ministry of Health care Financing Division retained supervisory functions. Under the new arrangement, DHMBs assumed the responsibility of planning for district health services.

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2.4.5 Policy issues

Decentralisation of financial management was implemented at the district tier with high expectations of improving efficiency, access, coverage and quality of public health care. Decentralized decision-making supports these changes by facilitating the use of revenue in ways that meet locally determined health service needs (Gilson *et.al* 1996). These anticipated benefits notwithstanding, fears have been expressed concerning the performance of the public health facilities (Kireria 1999). Against this background, a number of policy questions arise, particularly relating the country's performance with the financial reform to the district level namely:

- Is the system relevant in addressing the efficiency, equity and access objectives which it was set?
- Has efficiency in cost-recovery improved because of improved motivation at the facility level?
- How has the system balanced the multiple objectives of revenue collection with improved efficiency, access, quality of care and equity?
- To what extent has the reform enhanced technical efficiency in public health facilities? Have the hospitals registered any change in productivity and to what degree can this be associated with the decentralisation reform under investigation?
- What amount of savings can be attained from improved efficiency if any?

These policy issues are important because they are not meant merely to provide guidance on the performance of the cost-recovery programme, but more importantly, to determine how the implementation of fiscal decentralisation could be enhanced with a view to

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improving efficiency, quality, coverage and access to quality health care services. A vital step in carrying out this study is to provide baseline information to the ministry as it moves to decentralize the entire health sector, including the release of block grants and treasury allocations to the facilities.

2.4.6 Summary of relevant issues

The debate on decentralisation in general and its implied impact on efficiency, access, equity and quality of health care services has received much attention in the recent past. However, notwithstanding the rich debate on the decentralisation of the cost sharing revenue in the recent past, there is a conspicuous absence of clear evidence from critical appraisals of fiscal decentralisation within the health sector. Furthermore, the limited available evidence does not allow concrete conclusions to be drawn about the impact of fiscal decentralisation on efficiency improvements or even whether efficiency in health care delivery has occurred in practice. In short, there is little evidence that can be used to confirm the implied benefits of decentralisation of cost recovery revenue. As such, the evidence about whether fiscal decentralisation does indeed improve efficiency, equity or quality in service delivery still remains unclear. Thus, there is a need to critically examine the issue of fiscal decentralisation of cost sharing revenue in order to establish its impact on hospital efficiency and in the delivery of health care services in the country.

2.5 CONCEPTUAL FRAMEWORK

Attempts to analyze the impact of fiscal decentralisation or decentralisation in general on efficiency, equity, access and quality of care have been based on indicators specific to

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each of these policy objectives (Kutzin 1995; McPake and Kutzin 1997; and WHO 1993). The tendency therefore has been to examine the changes in the indicators related to each of the policy objectives and draw general inferences.

Based on information from the literature review the conceptual framework below consists of three main levels of effects. Firstly, the effects of fiscal decentralisation on quality, access, efficiency in revenue collection and use and the effects of financial decentralisation on hospital technical efficiency.

2.5.1 Impact on perceived quality of care

It will be possible that facilities will provide quality (proxied by availability of drugs, courteous staff, shorter waiting time etc) and more comprehensive health care services as they achieve more responsibility in decision making on the type of services to offer according to community needs. Quality has both supply and demand side characteristics. The critical demand issue is *perceived* quality: the consumer's assessment of the relative quality of different health care providers. It is thus an implicit indicator of utilisation patterns (to measure the user's experience with the available health care (Barnum and Kutzin 1993; Gilson *et.al* 1994). In addition differences in perceived quality of care provide an important explanation of why some patients/users of health care services bypass lower health facilities and refer themselves directly to district/sub-district facilities despite high cost in terms of time and cost of service.

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In the context of fiscal decentralisation in Kenya, information on quality of care is critical to assess whether the revenue generated has been used to improve the quality of services. Moreover, supply-side factors such as adequate and motivated staff, drug availability etc influence actual quality of services that are important in affecting perceived quality (Barnum and Kutzin 1993). In addition, information from both the patients and staff would implicitly reveal the problem areas of the reform policy and how they can systematically be resolved.

2.5.2 The effects of financial decentralisation on access

As noted earlier, access refers to the range and availability of health services available in a health facility. With the decentralisation of financial management, hospitals were expected to provide a wide range of health care services. Notwithstanding this expectation, access to health care may be affected unless regulatory actions (exemption and waiver mechanisms) are taken to avert the negative consequences of the financial reform policy. Thus, decentralisation associated with the introduction of cost sharing may have a negative impact on access as measured by access indicators such as total outpatient and inpatient services provided (Zhang *et.al* 1997).

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The positive features of financial decentralisation notwithstanding, hospital performance (as measured by technical and allocative efficiency, access and quality of care) may not have immediate response given the constraints on public services and the incentives in the new reform policy.

2.5.3 Cost recovery revenue

Decentralised decision-making of the cost-sharing revenue is expected to enhance efficiency of hospitals in the delivery of health care in two ways. Firstly, it is expected to remove delays of releasing the revenue from the health care financing division at the Ministry of Health headquarters which was responsible for planning and disbursement. Secondly, the retention and control of some portion of the revenue by the health care managers at the district level, would provide a critical incentive to cost recovery. Moreover, it would allow revenue to be used in ways that meet perceived quality weaknesses e.g. facilities would be able to address drug shortages, thus reducing the total cost of accessing public services and encouraging the poor to use public services (Gilson *et.al* 1995). However, improvement in health care is determined by the adequacy of the revenue to allow the coverage and/or quality improvements.

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2.6 THE EFFECTS OF FINANCIAL DECENTRALISATION ON TECHNICAL EFFICIENCY

Because of decentralisation of financial management of cost sharing revenue in the health sector, health facilities are expected to deliver health services without wastage of inputs and at the minimum possible cost. Data envelopment analysis (DEA) developed by Farrel (1957) was used to evaluate the impact of fiscal decentralisation on technical efficiency of hospitals.

2.6.1 Efficiency measurement concepts

Measuring efficiency in health care services is complicated by the nature of the output of services (i.e. the nature of the production process) and the variety of services produced.

This is further complicated because in measuring efficiency of health care services the ideal output is *real output* (i.e. change in health status) is affected by several socioeconomic and environmental factors which are not under the control of the DMUs (Eyob 2000).

Following the approach of Debreu (1951) and Koopmans (1951), Farrel (1957) developed a measure of firm efficiency which accounts for multiple inputs and provides solution to the problems associated with the traditional average measures of evaluating efficiency of decision making unit. He proposed an efficiency measurement approach for comparing each DMU with only the "best" DMU in the peer group with the restriction that each DMU lie on or below the efficiency frontier. A firm is said to be technically efficient if it is operating on the revealed best practice (Coelli 1996).

Under constant returns to scale assumption, Farrel demonstrated his notion of technical and allocative efficiencies using two inputs (x1 and x2) to produce a single output (y1). Figure 1 shows the efficiency frontier which is the fundamental concept of DEA. Any hospital on the frontier located on the isoquant is considered technically efficient and any DMU below it is relatively less efficient and has an efficiency rating of less than 1 (Coelli 1996). Thus, hospitals located on P, Q and M are technically efficient while those at points K and J are technically inefficient. The technical efficiency of this hospital is given by the distance QK (which gives the amount by which the hospital could reduce its input while keeping its output constant). The technical efficiency is measured by the ratio:

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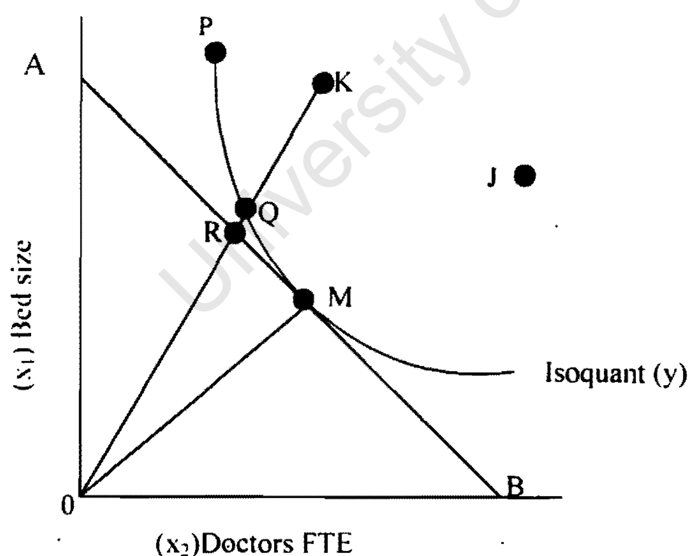
$$TE_T = \frac{OQ}{OK}$$

Technical efficiency takes a value between zero and one, which indicates the degree of technical inefficiency of a decision making unit (a hospital). A technically efficient hospital has a value of 1 (hospital located at point Q) because it is on the efficient frontier (isoquant), while technically inefficient DMUs have a value less than one (hospital located at point K). Hospital K could therefore become efficient if it reduces its inputs and relocate to point Q. Thus, Q can be used as a threshold against which to measure the performance of the other DMUs (hospitals).

The allocative efficiency (AE_K) is given by the ratio:

$$AE_K = \frac{OR}{OQ}$$

Figure 1: Technical and Allocative Efficiency



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The distance denoted by RQ indicates the cost reduction if the hospital is to be allocatively efficient at point M. For allocative efficiency to be achieved, the isoquant must be tangent to the isocostline AB. Thus, based on this definition the hospitals located at points P and Q are technically efficient but allocatively inefficient. Only hospital M located at the point where isocostline is tangent to the isoquant is both technically and allocatively efficient.

The total economic efficiency (TEE) is measured by the ratio:

$$EE_K = \frac{OR}{OK} = \frac{(OQ)}{(OK)} * \frac{(OR)}{(OQ)}$$

The three measures represent an input-output orientation since the concern is to produce the observed output with minimum inputs (Charness *et.al* 1994). Alternatively, one could use the output-oriented measures of efficiency which involve increasing outputs whilst keeping inputs the same (Coelli 1996). The commonly applied model is the input-output orientation because the input variables in many DMUs are the primary decision making variables. This notwithstanding, the type of orientation used has little effect on the efficiency scores obtained (Eyob 2000; Coelli and Perelman 1996).

Currently, there are two principal approaches for measuring the production frontiers namely: (1) the parametric approach that uses econometric methods (Jacobs, 2000; Anderson, 1980; Wouters, 1993); and (2) the non-parametric approaches that use *linear programming* techniques (Coelli, 1996; Farrel, 1967), such as, *data envelopment analysis (DEA)*.

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2.6.2 Data envelopment analysis (DEA)

DEA (Data Envelopment Analysis) is the optimisation method of mathematical programming that generalises Farrel's (1957) single-input/single output technical efficiency measure to the multiple-input/multiple-output case. Thus DEA is a technique for measuring technical efficiency. The original DEA was developed by Charness, Cooper and Rhodes (1978) with constant returns to scale assumption. and was extended by Banker.Charness and Cooper (1984) to include variable returns to scale. DEA measure is widely used in the evaluation and comparison of DMUs e.g. educational departments (schools. colleges and universities). health care (hospitals, clinics). agricultural production. banking. market research. benchmarking, index number. construction etc (Burgess *et.al* 1996; Bossofiane *et.al* 1991). DEA analyses the efficiency with which each DMU (in this study hospital) uses its inputs to produce a given level of output. It converts multiple inputs and outputs measures into a simple summary measure of productive efficiency. It determines the optimal input/output combinations and represents it with the "best revealed frontier". DMUs that lie on the best practice frontier have an efficiency score of one and are technically efficient relative to their peers. The other peers are assigned a score of between zero and one.

The advantages of DEA over stochastic frontier models are: (1) converts inputs and outputs into a single measure of efficiency for each decision making unit. (2) handles multiple inputs and outputs without the requirement for homogeneous measurements, (3) can adjust for exogenous variables that are outside the control of the management. (4)

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does not require specific functional form relating inputs to outputs, so as to compute the efficiency of a DMU and lastly (5) it focuses on observed best practice frontier unlike stochastic frontier models which focuses on central tendency properties (Charness, Cooper, and Rhodes 1978; Kirigia *et.al* 1999; Eyob, 2000). However, one disadvantage with DEA is that, it does not consider random noise (i.e. non-stochastic) e.g. earth quakes, epidemics, war etc.). As a result, any deviation from the efficiency frontier is assumed to be due to inefficiency.

2.6.3 The DEA model

The following linear programming problem based on the constant returns to scale assumption was estimated using DEAP software version 2.1 (Coelli 1996; Charness, Cooper and Rhodes, 1978).

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$$\text{Max } h_o = \frac{\sum_{r=1}^{s} u_r y_{rjo}}{\sum_{i=1}^{m} v_i x_{ijo}} \qquad (1)$$

Subject to

$$\frac{\sum_{r=1}^{s} u_r y_{rj}}{\sum^{m} v_i x_{ij}} \leq 1; \; j = 1, \ldots j_o, \ldots, n$$

i=1

$u_r \geq 0$; r =1........s and $v_i \geq 0$; i= 1,...., m

where: ho = the hospital being evaluated in the set of j = 1, ... n hospitals

y_{rjo} = Observed amount of $_{rth}$ (r = 1, ..., s) input for the jth hospital

x_{ijo} = Observed amount of ith (i = 1,... r) input for the jth hospital.

u_r = Coefficient/weight for output 'r' to be determined from the data in the DEA model.

v_i = Coefficient/weight for input "i" to be determined from the data by the DEA model

n = number of hospitals in the sample

s = the number of outputs

u = the number of inputs

Constant returns to scale assumes that the DMUs are optimal scale. However, in the case where this does not hold, construction of a DEA model based on the assumption of variable returns to scale is estimated. The LP model is given below.

$$\text{Max } ho = \sum u_r y_{rjo} + u_o \qquad (2)$$

$$\text{St. } \sum v_i x_{ijo} = 1$$

$$\sum u_r y_{rj} - \sum v_i x_{ij} + ui \leq o, j = 1, \ldots, N$$

$$u_r, v_i \geq 0$$

where the notations are as given in equation 1. μ_0 indicates returns to scale whilst $\mu_o \leq$ indicates decreasing returns to scale. μ=0 gives CRS whereas $\mu_o \geq o$ is for increasing returns to scale. The scale efficiency is computed from equation (2), regardless of whether the DMUs are operating on an optimal scale of production or not (Coelli, 1996; Eyob 2000).

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2.6.4 The empirical DEA Model

The current study redefines the relationship between the variables identified in the literature into an input-output oriented model. The input-output model was used in this study because the input variables are the primary decision making variables for which the health managers have control over unlike the demand factors which are exogenous and largely influenced by the health seeking behaviour of the public (Eyob, 2000; Fare *et.al* 1995; Fare *et al* 1994; and Gerdtham *et al.* 1999).

The above model was used to derive efficiency scores for each hospital in the sample to assess the effect of fiscal decentralisation on hospital performance (technical efficiency). Efficiency scores were computed for the periods 1994-1995 and 1997-1998. This is important in order to establish whether hospital performance has improved as a result of decentralisationn of financial management of the cost sharing revenue. Three outputs describe actual performance of the hospitals and are represented by (1) outpatient visits, (2) inpatient visits (inpatient days), and (3) cost-recovery ratio. Input resources are represented by (1) recurrent total expenditure (expenditure for labour and non-labour e.g. drugs, transport etc) and bed size (a proxy for hospital capacity).

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CHAPTER 3: THE STUDY METHODOLOGY

3.1.1 Introduction

This section outlines the study design, sampling method, data collection methods, the nature of data and information collected whilst in section 3.2 study limitations are highlighted. A summary of the data collected and the method used is provided in section 3.3. The study utilized both secondary and primary data. The focus for the study was the district and sub-district hospitals because the management of the cost-recovery revenue was initially devolved to the district level. Thus, although provincial hospitals are the ones mandated to approve AIEs, they are not directly involved in the financial management of the cost recovery revenue, hence were not included. This study would have benefited from the inclusion of Kenyatta National Hospital and health centres. In particular, Kenyatta (example of delegation form of decentralisation) because it has fully decentralised its financial management system and control. However, owing to time and financial constraints it was not considered.

3.1.2 Study design

Due to the nature of the study problem, the study was designed to retrospectively collect data for the periods 1994-1995, and 1997-1998, representing pre and post reform period of the cost-sharing programme, taking 1994 as the base period. This approach will help in assessing the impact of the decentralisation reform strategy on technical efficiency and its effectiveness in the delivery of health care services between the pre-and post-policy introduction periods (McPake and Kutzin 1997). Within the districts, the unit of analysis was the district hospitals and sub-district hospitals.

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3.1.3 Sampling Methods and sample size

A total of 82[2] public health facilities (district and sub-district hospitals) were considered for inclusion in this study. All facilities to be included in the sample were required to have complete information for the time periods 1994, 1995, 1997 and 1998. This generated a total of 39 district and sub-district public health facilities, comprising 27 district hospitals and 12 sub-district hospitals. The regional distribution was as follows: Eastern (10), Nairobi (1), Coast (9), Rift Valley (4), North Eastern (2), Central (7), Nyanza (4) and Western (2). The sample desired size for the primary data collection was 200 patients, both inpatients and outpatients and 60 health personnel staff. However, a total of 178 patients and 57 health personnel were ultimately interviewed.

3.1.4 The nature and type of data

The study utilized both primary and secondary data. Initially time series secondary data on the selected facilities was obtained from the Ministry of Health headquarters. Information obtained included, levels of utilisation (annual outpatients and inpatients), number of beds, cost recovery revenue and actual recurrent expenditure. This information was obtained from Health Information System's department (HIS) and Health Care Financing office in the Ministry of Health. The data correspond to the time period before and after decentralisation of financial management of cost sharing revenue to the district level. Primary data was collected from 4 *purposively* selected facilities. In selecting the districts, the study took into account the agro-ecological zones (high, medium, low and

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[2] currently, there are 67 district hospitals and several sub-district hospitals. Out of the 82 health facilities that met the criteria identified were included in the sample. This generated a total of 27 out of 67 district hospitals and 12 sub-district hospitals out of the total 22 considered for inclusion in the study.

marginal potential) in order to capture the varied and unique characteristics of the various districts in Kenya including differences in epidemiological and demographic profiles.

The secondary data was used in the input-output DEA model to generate efficiency scores for each facility. The service utilisation data was used to determine productivity change and mean efficiency scores in the selected public health facilities over the study period whilst primary data was used to examine how fiscal decentralisation may have impacted on service utilisation, and perceived quality of care.

The key sources of data and their detailed explanation are given below:

1. The Ministry of Health workload report for health facilities. This gives a summary of services provided at the public health facilities. These services are classified as outpatients, inpatients, maternity, operations and other specific services. The services were aggregated into total outpatients and total inpatients. These were used as outputs in the computation of technical efficiency
2. The Ministry of Health summary reports on authorized and actual personnel. The study considered only the actual personnel (medical and non-medical) at each of the facilities sampled. These were used to determine the ratio of medical to non-medical personnel and used along with other explanatory variables in the impact assessment of fiscal decentralisation on technical efficiency.
3. Government of Kenya Appropriation and other accounts. This provides information on recurrent expenditure. Total aggregate data on actual recurrent expenditure was obtained rather than recurrent budget estimates. This was necessary because of wide divergence between the budget estimates and the actual expenditure. Actual

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expenditure was used as input in the input-output DEA model for computing technical efficiency scores of the facilities.

4. The cost recovery revenue collection reports. This information was obtained from the facilities. The research instruments used for the field survey were designed for structured questionnaire-based interviews, 2 for the patients and 1 for hospital staff (questionnaire 1, 2, and 3 in Appendix 2). The questionnaires were designed to elicit information on access factors, patients' perceived quality of care and revenue collection and use. Besides capturing information on quality of care and access factors, the staff questionnaire was also designed to obtain information on the factors affecting the effectiveness of fiscal decentralisation, their understanding of financial/fiscal decentralisation and suggestions for improvements.

Six research assistants and a team leader were responsible for primary data collection. The six research assistants were first trained for two days on the questionnaire administration. Exit interviews were administered to outpatients as they left the health facilities after receiving treatment. They were randomly sampled after the medical officer had seen them.

The inpatient interviews were administered in the wards. The key informants for the staff questionnaire were the district medical officers of health, matrons, nurses in charge of wards, hospital secretary, hospital accountants and revenue clerks, pharmacists and clinical officers. The staff questionnaire was administered by one research assistant and

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the team leader instead of letting the staff complete their own. The earlier plan to have the staff complete the questionnaire on their own was changed after a discussion was held with the medical officer of health in the first facility. They expressed concern that the staff may not forward the filled questionnaires on time. However, part of the staff questionnaire was given to senior staff to complete.

The exercise received support from the Ministry of Health who wrote introduction letters to the district medical officers of health detailing the rationale for the study and seeking their cooperation in the exercise. This made it relatively easy for the research team to obtain permission from the health facility managers to carry out interviews in their facility.

3.1.5 Time period of the study

The data collection component of this study was conducted from 13th December 1999 to 20th January 2000. The collection of both the primary data and secondary data was carried out concurrently. Interviews on average lasted for about between 30 minutes to one hour. The research team commenced work at 9 am to 5 P.M. However, in some facilities, the exercise did not start until 2 p.m. because the medical officer of health was not available to give consent to conduct interviews. This happened when the senior officers were involved in a district management board meeting. Interviews were only conducted on weekdays.

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3.2 RELIABILITY AND VALIDITY

3.2.1 Training of research assistants

In order to ensure reliability and validity of the interview instruments, a two-day training exercise was conducted for the research team. This was necessary in order to standardise the method used in the administration of the questionnaire. During the session, questions that were unclear were clarified and appropriate explanations given. In addition, each question was discussed for purposes of creating uniformity in the administration of the questionnaire. Further, during the exercise, the team held a debriefing session after the data collection each day to report on possible problems of interpretations and after which appropriate amendments were effected. Besides, each research assistant was required to write a summary report of personal observations and/or problems experienced in the administration of the questionnaire.

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3.2.2 Ethical issues

Among the ethical issues considered was the issue of administration of inpatient questionnaire. Those patients who were not in a position to respond to the questions were not interviewed. The research team relied on the nurse in charge of the specific ward to identify the patients who were not too sick. Before commencing the interview process, informed consent was obtained from the patient. The patients were informed of the details of the study, their role and importance of their participation. Only 3 patients refused to participate in the exercise in the 4 facilities visited. The same procedure was applied to the outpatients and the staff. However, due to fear of victimisation of staff by their seniors, the hospital secretary or the matron introduced the research team to the

health personnel in the relevant departments. Finally, all the participants were assured of the confidentiality of the information they provided.

3.2.3 Data Analysis

Hospital efficiency scores were generated using DEAP software for each health facility in the sample. In order to explain the causes of the differences in efficiency within a facility over the specified period, the study utilises regression analysis with efficiency scores as a dependent variable. This approach has been used by Fare *et. al* (1996), and Gerdtham *et al.*,(1999). The estimation of the impact of fiscal decentralisation on hospital efficiency in this study is based on the input-output linear programming model for the generation of efficiency scores and an econometric model (Censored Regression Tobit Model).

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The Tobit regression estimates should be interpreted as describing the probability that a DMU (a hospital) will be efficient, given information about its output and input characteristics. The coefficients of a censored tobit model represents the effect of a unit change in the concerned explanatory variable on the probability of a hospital being found relatively efficient or being restricted to zero and one (Scott 1997; Greene 1997; Gujarati 1995). For instance, the slope coefficient for medical staff is – 0.4955. This means that on average an increase in the total number of medical personnel by one would lead to a reduction in hospital's probability of being efficient (censored) by 49.6%.

3.2.4 Data management and quality assurance

As indicated earlier, the study team met after the interviews and all the questionnaires were scrutinized to verify that all the responses were correctly entered and to check for

consistency. Where inconsistency was noted, it was rectified. In extreme cases, the particular questionnaire was discarded. The field data was entered into Excel by a data entry clerk. The secondary data was entered into Excel and then transferred into STATA statistical package. All the data was cleaned by checking for outliers or ineligible data.

3.2.5 Study limitations

Several problems were experienced in the collection of data. Firstly, it was not possible to obtain complete actual recurrent expenditure and utilisation data for some years due to poor record keeping and the unavailability of data for some facilities. Utilisation data and revenue generated is collected on monthly basis, but most facilities did not have complete data for the 12-month period. The data had therefore to be extrapolated from the available data obtained from the MoH summary reports on authorised and actual personnel while that of revenue collected extrapolated from the health care financing division monthly revenue reports. In some cases only the provincial data on cost sharing revenue were available, rather than district utilisation or revenue. Those facilities, which did not have data, were excluded in the final study sample. In addition, some facility managers and hospital secretaries tended to conceal some information, especially information related to user fees.

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The plan was to interview 200 patients and 80 health personnel from the selected facilities. This was however not possible because of delays in getting permission from the Ministry of Health Headquarters and the district medical officer (DMOH) in some of the facilities to enable us conduct interviews on time. This meant that the exercise commenced behind schedule. Second, a number of health personnel did not complete the

questionnaire where these were left with a request to complete them, as they were not available to be interviewed on the facility data collection days. Despite repeated visits to the facility to get the questionnaire, some of them had completed

Lastly, it was not possible to meet members of the district health management board to provide first hand information about the performance of the board and its effectiveness in carrying out its responsibilities.

Notwithstanding these constraints, the quality of data was not compromised. A number of strategies were adopted to address the above constraints. For example instead of first visiting the facility at the time of the interview, the team leader visited the facility on the day before day of the actual data collection to obtain permission from the facility manager. This improved the time required for data collection.

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CHAPTER 4: STUDY FINDINGS

4.1 Introduction.

This section presents the descriptive and analytical findings of the study. The analysis involves an examination of the survey data to highlight the impact of financial management of cost sharing revenue on hospital performance. As noted earlier, by decentralizing financial management and expenditure decisions, it was expected that facilities would improve efficiency in health services delivery, increase revenue collection and patient satisfaction. This section provides an analysis of the extent to which these objectives have been realised, using qualitative and quantitative approaches.

Ideally, in order to measure the success of the decentralisation of decision making of cost sharing revenue expenditure in achieving the stated objectives, it was necessary to assess the trends in technical efficiency as well as a patient survey of their perceived quality of service. In addition, a staff survey tailored to measure the changes in the quality of health care services among other objectives was also undertaken. The rest of the chapter is organized as follows:

Section 4.2 provides an overview of utilisation and revenue trends for the sampled facilities for the years 1994, 1995, 1997 and 1998. Survey results, highlighting efficiency (albeit indirectly) and quality of health services is presented in section 4.3. Section 4.4 presents efficiency scores for each of the MOH facilities in the sample for the period specified. Empirical results based on regression analysis of the impact of decentralized financial management of cost sharing revenue and other determinants is provided in

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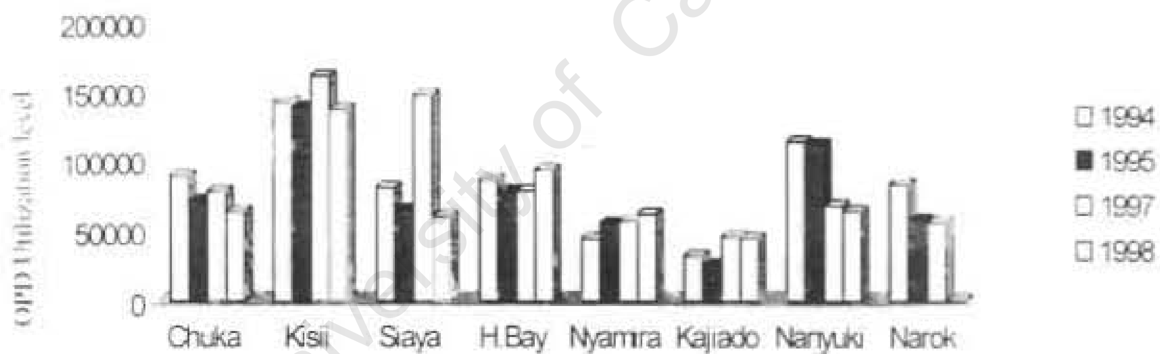
section 4.5. Pooled regression analysis using least square regression models to obtain the parameter estimates for the explanatory variables was done using LIMDEP statistical software.

4.1.1 Utilisation and revenue trends

This section briefly reviews trends in utilisation and revenue data for 39 health facilities for the period 1994, 1995, 1997 and 1998[3]. Graphical representations are used to highlight changes that have taken place, as well as issues that have to be taken into account when conducting the statistical analysis later on in the report.

Figure 2: Trends in outpatient attendance at sampled facilities



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4.1.2 Outpatient and impatient utilisation rates

Close scrutiny of Figure 2 above does not provide evidence of increased outpatient utilisation of health care services over the study period[4]. Indeed, there is no definite trend in outpatient attendances and the utilisation patterns tend to be similar in all the periods. It is worth, however, to note that, utilisation levels have been on the decline with the highest decline experienced in 1998 as depicted in figure 1 above.

Examination of figure 3 for inpatient utilisation reveals that while some facilities have experienced upward trends in inpatient admission, the majority of the facilities regardless of the period depict a downward trend. Further, it appears that the decline is more pronounced among the sub-district hospitals. Comparison of utilisation over time yields no discernible pattern although one gets the impression that a significant proportion of the facilities in 1997 experienced a downward trend, even though there were increases in some facilities. There is however, no evidence that inpatients admission have improved over the study period.

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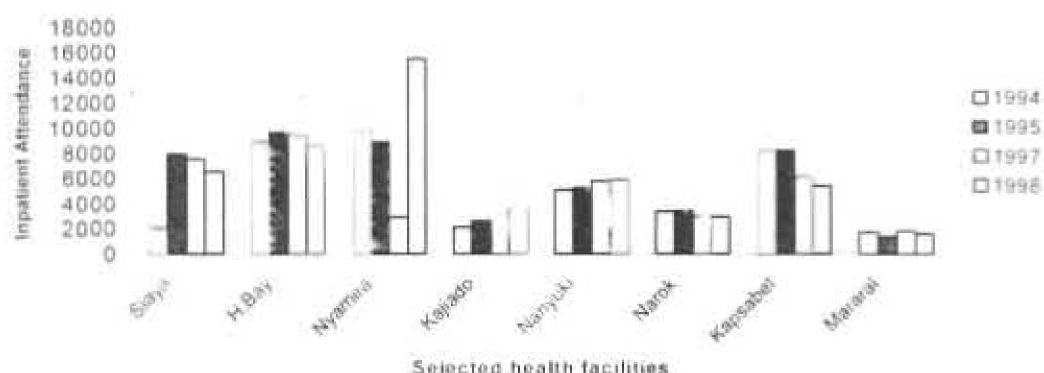
[3] the names of some of the facilities are not shown in the graph. All the 39 facilities are represented in the graph.

[4] despite the poor performance, some facilities recorded increased utilisation levels. Caution however, should be exercised in making this judgement because other factors, both institutional and environmental may have contributed to better performance of these facilities.

Figure 3: Inpatient utilisation trends



4.1.3 Difference between mean attendance before and after the policy reform

The study also assessed the difference in mean attendance for outpatient and inpatient before and after the implementation of the programme. Recall that the period 1994 to 1995 represents the pre-reform period and 1997 and 1998 the post reform period. The results are presented in Table 4.1a. 4.1b. 4.1c shown in appendix 2. The results concur with the findings above (see figure 2 and 3). As noted above, the results reveal no significance difference in utilisation rates between the pre and post reform periods. However, the mean difference for 1994 and 1998 is significant (t-value = 2.5407).

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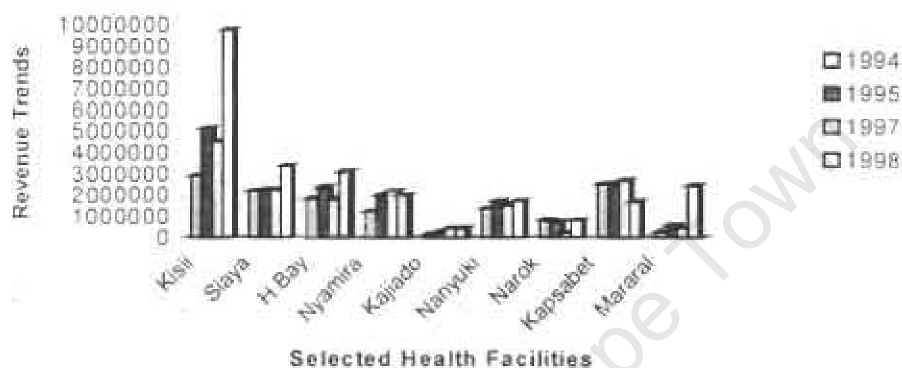
4.1.4 Trends in annual revenue collections

Figure 4 below shows the trends in revenues over the period in question. The results shown in the figure reveal that the cost recovery rate has been low and decreasing over time, although the performance in 1997 appears to be better compared to other periods. However, examination of the data reveals no discernible visual pattern in annual

revenues. An interesting observation is that the facilities that showed better results in 1994 continued to experience an upward trend in revenues as depicted in figure 4 below. This observation becomes even more evident when one compares the outpatient and inpatient utilisation trends for the same facilities.

Figure 4: Trends in annual revenue collection



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4.2 RESULTS OF THE PATIENT SURVEYS

Surveys were carried out to assess whether the delivery of health care services has improved as a result of decentralized financial management of cost sharing revenue. Information collected relates to quality, efficiency and access variables. As noted earlier, the issue of quality of care is viewed from two perspectives: patient perception, and staff perception of quality of care. Both are based on the premise that decentralisation of financial management of the cost sharing revenue would improve the quality of services if the revenue retained at the facility level is efficiently utilized to enhance service delivery. It is imperative to note that consumer satisfaction has become an important issue of the fiscal/financial decentralisation reform strategy, largely because of the

expectations that it would ensure adequate supply of drugs, improve conditions in health facilities, as well as providing incentives for improved overall quality of services (Barnum *et.al* 1993; Kutzin 1995, Gilson *et.al* 1994; Russel and Gilson 1995).

From a health provision perspective, it was expected that a facility should be able to acquire all the necessary requirements for the provision of quality services. These requirements comprise of facility specific attributes e.g. well maintained buildings, availability of reliable drug supply, courteous staff, enhanced staff morale, and a wider array of services provided by the facility. Apart from the qualifications, personal attributes entail issues of staff attitude towards patients, and adequate time dedicated to patient examination and treatment.

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4.2.1 Patients' perceived quality of services

Patients' perceived quality of care is inferred from their responses to specific health care providers' attributes in the process of seeking health care. To gain more insight into the quality of care, it is necessary to examine Table 4.1 and figure 5, which provide more details on the patients' perceived quality of care provided by the facilities sampled. The results show that the health personnel are usually courteous to patients. For instance, about 47% and 64% of inpatients and outpatients respectively indicated that the hospital staff were courteous.

Reliable supply of drugs is perhaps the most important factor of patients' inferred quality of care (Barnum *et.al* 1993; Gilson *et.al* 1994; Mwabu *et.al* 1995). Patients tend to prefer

health care facilities with an adequate and reliable supply of drugs. The survey results show that, the majority of the inpatients (64%) but minority of outpatients (45%) rated drug availability as poor and unreliable, while those who rated the overall quality of service as good was 20.5% and 36% for inpatients and outpatients respectively. Tables 4.1 and figure 5 show the patients responses.

Table 4.1: Inpatients' perceived quality of services

	Excellent	*Good*	*Fair*	*Poor*	*Don't know*
Availability of qualified personnel	7(8)	57(73)	4(5)	1(1.3)	9(11.5)
Courteous staff	6(7.7)	37(47.4)	30(38.5)	4(5)	1(1.3)
Cleanliness	3(3.9)	14(18)	33(42.3)	26(33.3)	2(2.6)
Waiting time	1(1.3)	22(28)	31(39.7)	20(25.6)	4(5)
x-ray /lab services	2(2.6)	17(21.8)	12(15.4)	14(18)	33(42.3)
Reliable supply of drugs	4(5)	4(5)	18(23.1)	50(64)	6(7.7)
Overall quality of service	1(1.1)	16(20.5)	46(59)	10(12.8)	5(6.4)

Note. The percentages are shown in the parentheses.

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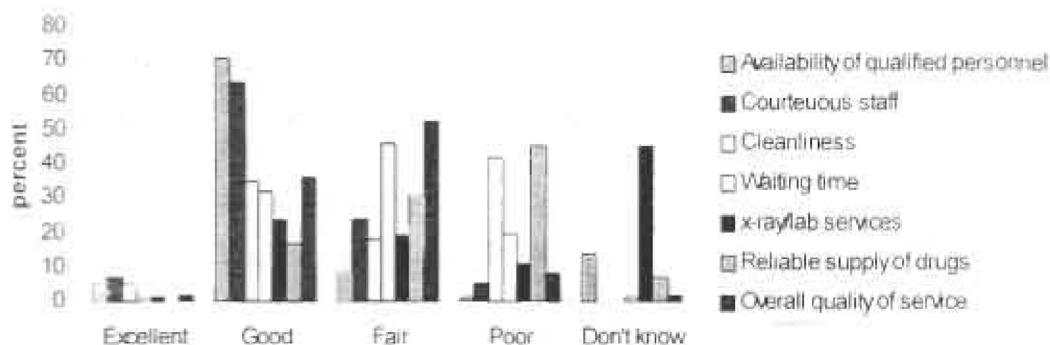
Figure 5: Outpatient perceived quality of service



4.2.2 Referral status

Of the 78 inpatients and 100 outpatients interviewed, 58.9% of inpatients and 67% outpatients were self referred, while another 35.8% and 33% of inpatients and outpatients respectively were referred to the hospitals, with most of the referrals originating from private clinics, health centres and dispensaries. Reasons given for bypassing were that the lower level facilities lacked diagnostic tests (25.6%) or drugs (16.7%) and that the health personnel at the health centres were not competent (3.9%). Another 3 (3.9%) individuals cited long waiting time, while 50% could not provide any reason for bypassing.

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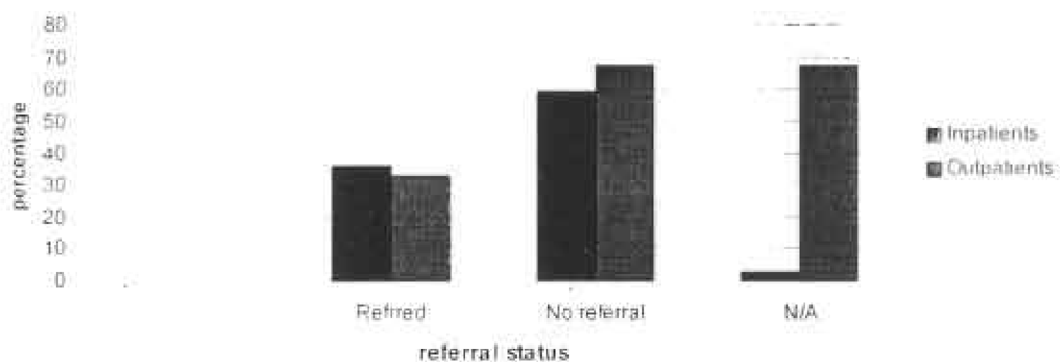
Figure 6: Referral status of patients



4.2.3 Waiting time

Waiting time is critical in determining patient's choice of health care providers (Mwabu *et.al* 1995; Barnum and Kutzin 1993; Gilson *et.al* 1994). The effect of this may however, vary by individual patient's characteristics. Waiting time carries different levels of opportunity costs. For those with high time preference, the opportunity cost per facility visit would be very high. Therefore, they may choose facilities with the perceived least waiting time. Responding to the question on waiting time, 35% of outpatients and 32% of inpatients judged the waiting time to be short. Another 43% of outpatients and 50% of inpatients considered waiting time to be average, while another 11.5% and 14% of outpatients and inpatients respectively felt that the waiting time was too long. Further, it was revealed that the physician spent on average 5 minutes for diagnosing and treating the patients, with the majority noting that the contact time was adequate.

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4.2.4 Patients' perception about doctor's/nurse's handling of their problems

The way the nurse or the doctor handles the patients' may influence their perceptions about the quality of services (Barnum *et.al* 1993; Randall *et.al.* 1990; Gilson *et.al.* 1994). This study sought to determine the patients' perception about the nurse and/or doctors' concern about the patients' feelings. The respondents were asked whether they were comfortable with the language used. The majority (80.8%) answered in the affirmative while 18% indicated that they were not comfortable. Only 1% of the respondents failed to respond to this question. Asked whether they would have preferred another language, 79.5% of the inpatients indicated that they had no problem with the language used whilst only 19.2% of the patients preferred another language. About 62.8% and 53.9%of the patients reported that the nurses or doctors were able to diagnose their problem and/or the illness. Another 58.9% said that their problems were well addressed. The responses are provided in Table 4.2 below.

Table 4.2 Patients' perception about doctor's/nurse's handling of their problems

Responses	*Doctors understanding of the patient's problems*		*Proper diagnosis of patient's illness/symptoms*		*Effective handling of the patient's problems*	
	Number	Per cent	Number	Per cent	Number	Per cent
Very well	16	20.6	20	25.6	12	15.4
Well	49	62.8	42	53.8	46	59
Only partly	10	12.8	12	15.4	19	24.4
Not at all	3	3.8	4	5.2	1	1.2
Total	78	100	78	100	78	100

4.2.5. Whether the patients were satisfied with the services provided

Among the patients in the sample, 29 (or 37.2%) of the inpatients and 34% of outpatients reported that they were satisfied with the services provided while 62.8% and 63% of inpatients and outpatients respectively indicated that they were not satisfied. The reasons given for dissatisfaction were shortage of drugs and other critical supplies (69% of outpatients and 66.7% of inpatients) such as hospital linen and beds, which were noted to

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be inadequate and in a deplorable state. About 12% of inpatients and 4% of outpatients noted that the attitudes and actions of providers of care (health personnel) contributed to the deterioration of care. Only one individual cited lack of specialized treatment as a cause for dissatisfaction (see Table 4.3). The survey findings reinforce the most important point that perceived quality of hospital services was undermined by lack of drugs. This finding agrees with the reported low overall quality of care noted earlier.

Table 4.3: Reasons for dissatisfaction

	Inpatients		*Outpatients*	
	Number	Percentage	Number	Percentage
Shortage of drugs and other critical supplies	52	66.7	69	69
Rude and discourteous staff	9	11.5	4	4
Lack of specialized treatment	1	1.3	-	-
Others	6	20.5	27	27

Source: Survey data

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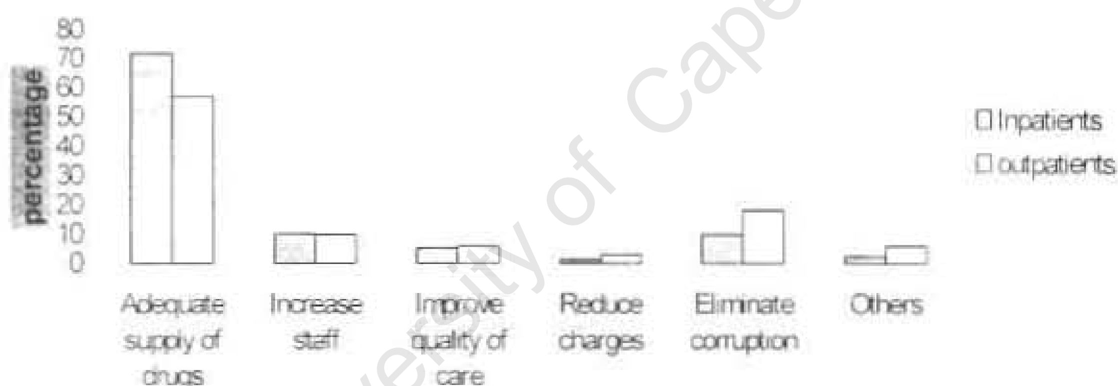
4.2.6 Perceptions of whether revenue collected is adequately utilised

Responding to the question as to whether the revenue collected was adequately utilized, about 67% inpatients felt that the revenue was not appropriately utilized. Only 24.4% answered in the affirmative. Field discussion with the district medical officers of health contradicted the staff and patients' assertion that the revenue collected is not effectively utilised. However, scrutiny of the revenue collected and amount banked showed a wide discrepancy. Further discussion with the medical officers revealed that the difference results as a result of the amount that is used to meet emergencies. The study could

however, not ascertain this response. As a follow up to this question, a general question was put to the respondents to discuss openly the things that the administration should do to improve health care delivery. The majority of the patients (71.8% of inpatients and 57% of outpatients) noted that the hospital management should ensure regular supply of drugs, employ more staff (10.3% of inpatients and 10% of outpatients), while elimination of corruption was also identified as an important factor in
the improvement of health care delivery. The responses are as presented in figure 7 below.

Figure 7: Suggestions for Improving Health Care Delivery



It is clear from the figure that an adequate supply of drugs is the most critical factor in enhancing the delivery of health care services. As noted earlier, the shortage of drugs has persisted despite the decentralisation of financial management of cost sharing revenue. The staff blamed the management and incompetent clerks for the shortage. This supports the assertion among the staff and the patients that drug selling, corruption and lack of effective planning contributes to the shortages. The staff views (see section 4.3) need to

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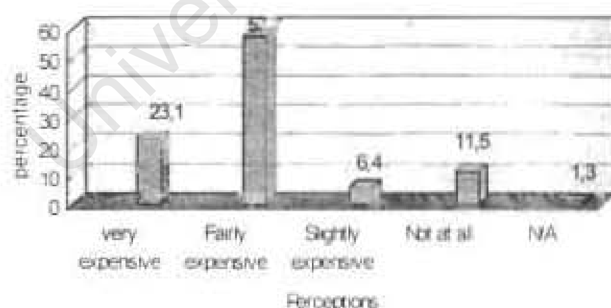
be treated with caution because our discussion with the district medical officers of health produced conflicting information from those expressed by the staff and the patients. This is investigated further in section 4.3.

4.2.7 Patients' reflections about the cost of care

A question was put to the respondents soliciting their views about the cost of health care services. It should not be forgotten that the cost of care is one of the factors hindering access to health services (Barnum and Kutzin 1993; Gilson *et.al* 1994). Based on figure 8, slightly above half of the respondents indicated that the cost of service was fairly expensive, (57.7% of inpatients and 58% of outpatients), very expensive (23% of inpatients and 9% of outpatients) while another 11.5% of inpatients and 15% of outpatients noted that the cost was not expensive at all.

Figure 8: Patients perception on the cost of care



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4.3 RESULTS OF THE STAFF SURVEY

4.3.1 Revenue collection and use

Opinions of the medical personnel at the health facilities in relation to the impact of decentralized financial management of cost sharing revenue is important in assessing whether the programme is achieving the stated objectives. As noted in the literature, the success of the reform strategy requires informed and sustained commitment from the staff responsible. A total of 57 health personnel consisting of 32 (56%) females and 25 (44%) males, most of whom had professional training, were interviewed.

4.3.2 Knowledge of the objectives of financial decentralisation

Of the 57 staff interviewed (these comprised of key informants; heads of departments, hospital secretaries, hospital accountant, the chief nursing officers and the medical officers of health) an overwhelming majority, 55 (or 96.5%) were aware of the decentralisation of cost sharing revenue expenditure. Only 2 (amounting to 3.5%) were not aware of the reform programme. Further, in response to the question on objectives of the reform, the most commonly stated objectives were to improve hospital services (45.6%), to supplement government revenue (12.3%), and improve hospital efficiency (5.3%), while 21% did not have any idea of the objectives.

4.3.3 Health facilities' ability to meet the targets

In response to the question on whether the facilities had met revenue collection targets, it was revealed that all the facilities are required to set their own revenue targets. The

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concern of the study was not to establish the mechanism for setting the targets. Rather it aimed at determining whether the facilities have been able to realise these targets or not.

The survey results revealed that a significantly high number (93%) of the sampled facilities performed below expectations and only 7% were found to have realised their targets. Of those claiming that the facilities had not met the targets set, about three quarters (75.4%) attributed this to poor financial management, high staff absenteeism (5.3%), low supervisory visits and infrequent meetings by the district health management boards (5.3%) among other reasons. The responses are presented in Table 4.4 below

Table 4.4 Reasons for not meeting revenue targets

Reasons	Number	Percentage
Poor financial management	43	75.4
High staff absenteeism	3	5.3
Low supervision by DHMBs	3	5.3
Theft	2	3.5
Inappropriate recording and reporting system	1	1.8
Unauthorized exemptions	1	1.8
Others	4	7.0
Total	57	100

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4.3.4 Information on banking of the revenue collected

Based on the survey results, 42 (77.7%) out of the 57 health personnel interviewed indicated that the revenue collected should be banked the same day, the following day (10.5%), or once a week (7%), while 4 others (7%) were not aware when the revenues should be banked. Notwithstanding this awareness, the majority of the respondents 44 (or 77.2%) indicated that the amount banked did not match the revenue collected. Only 19.3% of the respondents said that all the revenue collected was banked. All the 44 who

felt that not all the revenue collected was banked cited the following reasons: spending before banking (40.4%), theft of funds (33%), spending without authority (7%) and fraud (1.8%). The rest (17.5%) did not have an idea of the cause of the discrepancy. Those who claimed to have no explanation in this regard were reluctant to divulge information for fear of victimisation by their seniors, a fact that reinforces the survey findings that laxity in financial management and control by the managerial staff may be contributing to the observed variation.

When asked the circumstances under which the revenue collected could be spent before banking, 31.6% cited emergency cases, purchase of drugs (3.5%), for transport purposes (1.8%), or other reasons (63.2%). The category 'other' refers to expenditures such as miscellaneous items e.g. stationary, painting the waiting rooms, maintenance of buildings and on food for inpatients. As noted earlier, 95% of the revenue collected is supposed to be banked while 5% is retained to meet emergency purchases of drugs or food for patients. Therefore, some of the reasons given do not provide sufficient grounds for spending the revenue before banking, or following proper procedures for approving expenditure plans.

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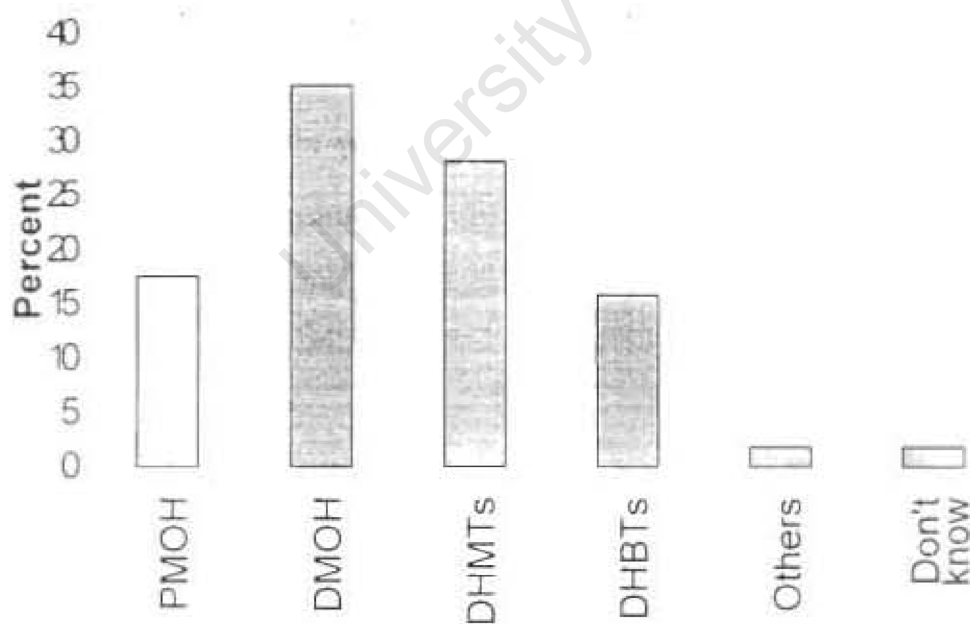
4.3.5 Who should be involved in planning and management of revenue raised?

To gain more insight into whether planning and management of revenue collected is effectively carried out, it is helpful to examine who should be involved in planning and management of the revenue generated. A general question was put to the respondents to solicit their views on who should be involved in the management of the revenue

generated. The following responses were obtained: district medical officer of health (35.1%), DHMTs (28.1%), provincial medical officer of health (17.5%) and DHMBs (15.8%) in that order (see figure 9). Currently, the process of approving the AIEs has to pass through three stages; first approval of proposals from health facilities by the DHMTs, second, approval by the provincial medical officer of health, and finally the district treasury. This process was described as cumbersome, costly and inefficient. For instance, field discussion with the medical officers of health revealed that, although financial decentralisation of the cost sharing revenue have been effected, in practice, they do not have full control over the revenue. This is mainly because the money is banked at the district treasury which is under the office of the president. The treasury has been accused of inefficiency and delays in releasing AIEs.

Figure 9: Who should be responsible for approving AIEs



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4.3.6 Utilisation of revenue collected

Information on how the revenue collected is utilised by a facility is important in assessing hospital efficiency in resource use and quality aspects of the health services provided. Efficient utilisation of the revenue generated will be enhanced if the health personnel are aware of how the revenue should be used. It is therefore a matter of considerable importance that, the staff are aware of how it should be is spent. It is encouraging to note that, the majority of the respondents (79%) were aware of how the revenue generated should be spent. About 8.8% of the respondents were not aware, whilst the remaining did not respond to this question.

Asked how the revenue retained should be used, the following uses were identified, purchase of drugs (73.7%), buying equipment (7%), building maintenance (5.3%) and 'other' (4%). The category of 'other' includes expenditures on stationary, hiring of casuals, security guards and transportation. It is evident that, the revenue raised is used in provision of some services which the government is expected to provide. The cost sharing revenue is meant to supplement the government in the purchase of emergency drugs and for improvement of the facilities, and not, as is the case, assume a bigger responsibility in providing services.

4.3.7 Efficiency of district treasury in processing claims

Financial decentralisation may not achieve the stated objectives if the revenue generated is not managed efficiently. The district treasury is in charge of financial information and management of financial transactions. Responding to the question on the effectiveness of

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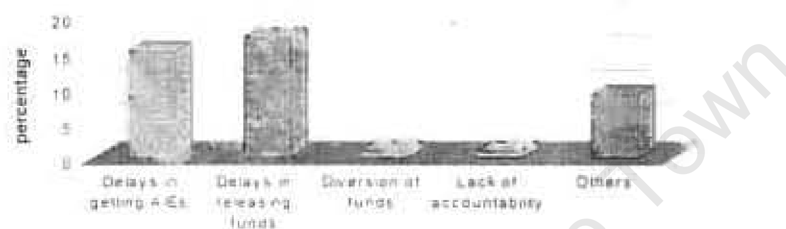
the district treasury in performing its stated functions, 43 people (75.4%) considered treasury to be inefficient in processing hospital claims. Of those claiming that district treasury had not performed its duty efficiently, 35% identified delays in getting AIEs, 39% delays in releasing funds, 2% diversion of funds and 2% lack of accountability (see figure 10 below).

Figure 10: Performance of district treasury



4.3.8 Transport Services

As mentioned earlier, one of the reasons for decentralisation of financial management is to allow the hospital managers meet some of the recurrent expenditures e.g. maintenance of vehicles and purchase of other essential inputs. Of the total staff interviewed, 70% indicated that most of the vehicles were not in good working condition while only 28% said that the vehicles were operating. Through observation, it was revealed that the majority of the health facilities had old vehicles most of which had been grounded. Lack of service, high operating and maintenance cost coupled with diversion of funds was cited as the reason for non-operational vehicles. As a result of non-operational vehicles, most of the facilities in the sample were not in a position to carry out supervision of primary and preventive health care activities, or distribute drugs and other medical supplies in time.

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4.3.9 Whether government budget allocation to hospitals has been reduced

As noted earlier, continued funding of health facilities by the government is essential for the objectives of financial decentralisation to be realized. Has government reduced budget allocations as a result of the cost sharing revenue being retained by the facilities? About 70% of the staff interviewed responded in the affirmative, another 24.6% did not agree while the remaining did not respond to this question. Examination of the quarterly recurrent expenditure allocations revealed that, most health facilities receive between Ksh. 350,000 to Ksh. 800,000. This allocation is hardly adequate for the several services that the medical officer of health has to meet for the entire district. Indeed, some sub-district hospitals received larger budget allocations than the district hospitals. The figure highlights and confirms disparities in the allocation among facilities. Thus, although expenditure allocation was higher in 1997-98 period, there are discrepancies among facilities.

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As noted earlier, most of the facilities experience acute shortage of drugs. When asked for an opinion on duration taken to restock the drugs, the following responses were obtained: 19 persons out of 57 (or 33.3%) said one week, 16 persons (28.1%) believe that it takes one month, while another 20 (35.1%) said over a month. Notwithstanding the variations in the responses, one thing is clear, that there are delays in procurement of drugs, and perhaps, this explains the lack of drugs reported in most of the health facilities. The reasons advanced for problems relating to drug supply and use were: poor stock management (63.2%), procurement problems (19.3%), delays in distribution within the facility (7%), and inadequate funding (8.8%). Further, it was revealed that poor stock

management is caused by the management's failure to comply with the departmental requests and unskilled clerks in charge of pharmacies. The staff themselves have intimated that the situation has deteriorated since the time when the government was fully funding the delivery of health care services.

4.3.10 Staff perception about the quality of service.

The majority (66.7%) of health personnel reported that the services had either deteriorated or not improved at all. However, 42% of the staff indicated that the maintenance of buildings had improved, although at the expense of essential services such as drugs, laboratory reagents, bed and linen among others. Similarly staff morale was reported to be very low with 49% citing this response. These findings concur with the views expressed by the patients. Based on these revelations, it is noteworthy to mention that, on average, the quality of services has deteriorated contrary to the expectations.

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4.4 MEASUREMENT OF HOSPITAL EFFICIENCY: DEA RESULTS

4.4.1 Introduction

This section presents the DEA efficiency results for the specified period. This is then followed by regression analysis to assess the impact of fiscal decentralisation and other explanatory variables on technical (in) efficiency.

4.4.2 The DEA model

In order to carry out a DEA assessment, it is necessary to construct an input set to reflect the resources used by the health facilities in the sample and an output set to reflect the corresponding outputs they secure. Two inputs were used namely; recurrent expenditure and number of beds (a proxy for the size of the facilities and their capital stock); and three outputs comprising outpatient visits (general outpatient, casuals, special clinics, deliveries, family planning, and dental clinic), inpatient admissions and cost recovery ratio. It is worth mentioning that the health personnel are financed by the central government and they constitute part of the recurrent expenditure in the above input set. There is no reason therefore, as to why all the resources should not be reduced to the single input of total recurrent expenditure.

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The above inputs and outputs were used to model hospital services as a multi-input and multi-output production process. In addition, the assumption of variable returns to scale is tenable for the above input-output variables[5]. This study reports technical efficiencies

[5] The assumption of CRS is appropriate when all the hospitals are operating at an optimal scale. However, factors such as financial constraints, constraints brought by health sector reforms, quality issues, perhaps, may make a hospital not to operate at the optimal scale. The use of the CRS assumption when not all the hospitals are operating at the optimal scale will produce efficiency measures, which are confounded by

under VRS assumption. The results were computed using TIM Coeli DEAP Version 2.1 software and based on the input oriented DEA model produce measure of technical efficiency for each health facility sampled.

Table 4.5 Distribution of Technical Efficiency Scores

Observations = 39	1994	CRS	VRS	SCALE Efficiency	1995	CRS	VRS	SCALE Efficiency
Mean		0.47	0.46	0.77		0.44	0.63	0.71
Standard error		0.22	0.28	0.18		0.23	0.27	0.18
Minimum		0.14	0.17	0.47		0.14	0.21	0.37
Maximum		1	1	1		1	1	1
Hospitals on frontier		2	9	2		3	10	3

Observations = 39	1997	CRS	VRS	SCALE Efficiency	1998	CRS	VRS	SCALE Efficiency
Mean		0.42	0.55	0.76		0.42	0.58	0.73
Standard error		0.25	0.28	0.19		0.22	0.26	0.18
Minimum		0.13	0.19	0.36		0.14	0.14	0.34
Maximum		1	1	1		1	1	1
Hospitals on frontier		3	7	3		3	8	3

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Hospitals with an efficiency score of 1 are efficient in a technical sense and hospitals with a score of less than 1 are technical inefficient. In 1994, 9 out of 39 facilities in the sample were efficient compared to 10 in 1995, 7 and 8 in 1997 and 1998 in that order. These hospitals constitute the benchmark against which the other hospitals have been compared and found to be inefficient.

The results derived from the DEA estimation indicate that technical efficiency scores range (using VRS assumption) from 17 to 100 per cent for 1994 and 27 to 100 per cent for 1995 with an average of 46 and 63 per cent for 1994 and 1995 respectively (Table

scale efficiencies. The use of VRS allows the computation of technical efficiencies devoid of scale

4.5). The mean of technical efficiency scores of the sample for 1997 and 1998 is 55 and 58 per cent respectively, with a low of 19 per cent for 1997 and 14 per cent for 1998 and a high of 100 per cent for both 1997 and 1998.

The difference in the constant returns to scale (CRS) and variable returns to scale (VRS) technical efficiency scores indicates that the hospitals have scale inefficiency. Table 4.5 shows that the average scale efficiency of the sample range from 77 per cent for 1994 to 71 per cent for 1995 with a low of 36 per cent and a high of 100 per cent. This indicates that some of the hospitals are not operating quite close to optimal scale.

Further, these results do not reveal a discernible pattern although there has been a tendency for a significant proportion of the facilities to experience a downward trend in performance. Nevertheless, some facilities have registered some improvements in efficiency levels, albeit, generally a small improvement. However, despite improvements in performance in most of the facilities in 1998, the overall mean efficiency still remains low compared to that of 1994 and 1995. The least efficient hospital in 1994, 1995, 1997 and 1998 has an overall efficiency score of 0.171, 0.212, 0.193 and 0.229 respectively (17.1, 21.2, 19.3, and 22.9) percent relative to the efficient ones (see appendix 3).

The average efficiency score for 1994 is 46 percent, which implies that the 54 percent inefficient hospitals are using more resources compared to the 9 best performing hospitals. Similarly, the overall average score for 1995, 1997 and 1998 of 0.63 (63%), 0.55 (55%), and 0.58 (58%) respectively, implies that the 29, 32, and 31 hospitals for

efficiency effects (Coelli 1996)

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1995, 1997 and 1998 in that order are using more resources compared to the best performing hospitals. For the years 1994 and 1995, the facilities could lower their costs by 54% and still achieve the current levels of output, compared to 45% and 42% for 1997 and 1998 respectively. The results for 1998, do, however, represent some improvements on specific facilities, and when judged within the context of financial decentralisation of cost sharing revenue. On average, however, the results show a marked decline in performance over time.

A frequency distribution of technical efficiencies within the ranges of 0.05 is given in Table 4.6. It shows that facilities in 1995 performed relatively better compared to 1997 and 1998 (table 4.6 indicates that in 1995, 10 facilities had a score of 1, whilst 19 out of the 39 experienced a decline in technical efficiency. It is also clear from the table that the distribution of technical efficiencies for the hospitals has a wider spread of values between 0.14 to 1.0, indicating low technical efficiencies in both pre and post reforms.

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Table 4.6: Distribution of Technical Efficiencies of hospitals

	Pre-reforms				Post-reform			
	1994		1995		1997		1998	
	No.hosp	%	No.hosp	%	No.hosp	%	No.hosp	%
0.14-0.19	2	5	0	0	1	3	1	3
0.19-0.24	1	3	2	5	5	13	1	3
0.24-0.29	2	5	3	8	4	10	3	8
0.29-0.34	2	5	3	8	3	8	4	10
0.34-0.39	1	3	0	0	2	5	2	5
0.39-0.44	3	8	3	8	0	0	2	5
0.44-0.49	6	15	5	13	7	18	6	15
0.49-0.54	2	5	4	10	2	5	5	13
0.54-0.59	1	3	2	5	1	3	2	5
0.59-0.64	3	8	0	0	1	3	2	5
0.64-0.69	0	0	1	3	1	3	1	3
0.69-0.74	0	0	3	8	1	3	0	0
0.74-0.79	3	8	0	0	1	3	1	3
0.79-0.84	2	5	1	3	1	3	0	0
0.84-0.89	1	3	2	5	2	5	0	0
0.89-0.94	0	0	0	0	0	0	1	3
0.94-0.99	1	3	0	0	0	0	0	0
1	9	23	10	26	7	18	8	21
	39	100	39	100	39	100	39	100

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4.5 DETERMINANTS OF VARIATION IN HOSPITAL EFFICIENCY

4.5.1 Regression results

This section presents the regression results of the study. The section consists of two sets of results whose findings are presented in turn. To start with, descriptive statistics of the variables in the estimation used are summarised in Table 4.7. This is followed by the regression of the econometric estimates of the impact of decentralised financial management and other explanatory variables on technical efficiency.

As noted earlier the observation for the sampled facilities are based on time series data. As such it was necessary to perform a panel data analysis for the specified period since the focus is on changes in efficiency over time. This analysis was deemed necessary in

order to determine whether there are any (statistically significant) changes in hospital efficiency over the study period. This was achieved through the application of Limited Dependent Variable Model or Censored Tobit Model.

4.5.2 Descriptive statistics

The descriptive statistics of the variables used in the censored model are presented in Table 4.7 below.

Table 4.7: Summary of Statistics of the Variables

Variable	*Mean*	*Std. Dev.*	*Minimum*	*Maximum*	*Cases*
Technical efficiency	0.5887	0.2722	0.1000	1.000	156
Average length of stay	5.8079	5.6895	0.0000	1.000	156
Number of beds	176.71	99.980	45.000	396.0	156
Bed occupancy rate	38.794	44.039	0.0000	477.0	156
Number of medical staff	213.00	126.00	25.000	639.0	156
Non-medical staff	91.000	54.000	12.000	213.0	156

The data provides various pointers: Firstly, the average efficiency for the sampled facilities is about 59%, implying that the facilities are using more resources than they require. Put differently, the facilities are 41% inefficient. Intuitively, this implies that with the existing resources, service delivery could be increased by a further 41% suggesting increased coverage of, and access to health care through improvements in efficiency. Secondly, The average length of stay (mean number of days from the date of admission to discharge for each patient) is about 5.8 with wide variations among facilities. Thirdly, the bed occupancy rate is about 39% with significant difference among the sampled facilities as displayed by the standard deviation. The remaining variables (medical staff and non-medical staff) also display a marked difference among the facilities.

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On the whole, the descriptive statistics demonstrate wide differences in means in the variables used. Perhaps, these variations could probably be a reflection of the differences in capacities of the facilities.

4.5.3 Impact of financial decentralisation on hospital efficiency.

Econometric analysis was done to examine the effects of fiscal decentralisation and other explanatory variables identified in the literature on hospital (in) efficiency. A review of literature showed that besides decentralisation, a number of institutional factors (these are under the control of the health managers of DMUs) and exogenous factors (outside the control of the managers) influence hospitals efficiency. Some of determinants or sources of (in) efficiency include: DECENTRALISATION REFORMS, BED OCCUPANCY RATE (BOR), AVERAGE LENGTH OF STAY (ALOS), NUMBER OF MEDICAL STAFF (MSTAFF), NON MEDICAL STAFF (NMSTAFF), BED SIZE (BED), LOCATION (URBAN/RURAL), TYPE OF OWNERSHIP (FOR-PROFIT/NOT-FOR-PROFIT) and QUALITY OF SERVICE (Byrnes and Valdmanis 1994; Eyob, 2000; Kirigia *et.al* 1999).

The technical efficiency scores (dependent variable) derived from DEA were estimated using a censored Tobit model. In order to examine the causes of inefficiency, a new random variable was defined to transform the original DEA scores into inefficiency scores. According to Green (1993), the censoring point is restricted to zero (at the left) using the specification:

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Inefficiency score = (1/DEA score) – 1. (3)

The estimable regression model takes the following form:

$$INEFFSCORE = \beta_0 + \beta_1 BOR + \beta_2 ALOS + \beta_3 DDUMMY + \beta_4 MSTAFF + \beta_5$$

Expected sign (-) (-) (-) (?)

$$NMSTAFF + \beta_6 BEDSIZE + \mu$$

(?) (-)

Where: INEFFSCORE = Inefficiency score

BOR = Bed occupancy rate (%)

ALOS = Average length of stay

DDUMMY = Fiscal decentralisation dummy

= 1 if decentralisation

= 0 otherwise

MSTAFF = Number of medical staff

NMSTAFF = Non medical staff

BEDSIZE = Bed size (proxy for hospital capacity)

Statistical analysis was performed using LIMDEP statistical software. Table 4.8 summarises the censored Tobit model results of the regression analysis contacted to determine the causal-effect relationship between technical (in) efficiency score and the various explanatory variables.

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4.5.4 The results of the censored Tobit model

Tobit model results are summarised in Table 4.8 below. The coefficients from OLS and MLE models are similar suggesting that either of the coefficients can be used for analysis. This study reports the Ordinary Least Squares estimates.

Table 4.8 Econometric Results

Dependent Variable: Censored Technical efficiency Scores

Variable	*Coefficients*	*B/std error (t-ratios)*	*Probability value*
Constant	0.5439	9.0320 ***	0.0000
Financial dec. dummy	0.1671	0.3860	0.6999
Average length of stay	-0.9669	-0.2170	0.8283
Number of beds	-0.4825	-0.1790	0.8576
Bed occupancy rate	0.2236	3.6950 ***	0.0002
Medical staff	-0.4955	-1.9850 **	0.0471
Non-medical staff	0.7655	1.4610	0.1440
Adjusted R-Squared	0.1261	F-Ratio: 4.56 ***	p-value 0.00028
Diagnostic Test	Log-L: -4.7014	Restricted (b=0) Log-L	-17.8489
*** **Significant at 1% level**	** Significant at 5% level	Observations = 156	DF = 149

The R-squared (R^2) seems satisfactory in terms of statistical criteria and explanatory power. The explanatory power for the Tobit model is reasonably high and statistically significant at 1% level, indicating that the probability of jointly observing the technical efficiency is about 0.13. The coefficient of the fiscal decentralisation dummy variable, which estimates the difference between the mean hospital performance has the expected positive sign but it is not statistically significant from zero. These results indicate that the probability of a hospital being technically efficient given financial decentralisation is 0.1671. Alternatively, it indicates that, the effect of financial decentralisation on the

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probability that a hospital is efficient is about 17%. This means that fiscal decentralisation of cost sharing revenue would lead to an increase of 17% in the probability of a hospital being relatively efficient. This finding is surprising in the light of the conventional wisdom that decentralisation of financial management would enhance hospital efficiency and in turn, improve quality of care. This finding goes against the theoretical prediction that decentralisation of financial management would enhance hospital efficiency in the delivery of health care services.

The coefficient estimate for the bed occupancy rate is positive and statistically significant at the 1% level. This is consistent with our prior expectations. This implies that higher occupancy rates lead to higher efficiency levels. The slope coefficient of *ALS* is negative contrary to our a priori expectation, although it is statistically insignificant.

The coefficient estimate for medical staff is negative and statistically significant at the 5% level implying that, on average an increase in the total number of medical personnel by one would lead to a reduction in hospital's probability of being efficient by 49.6%. The results are inconsistent with a priori expectation. This finding perhaps indicates that the health staff are not being utilised fully. This is not surprising given the low occupancy levels noted in section 4.1.3 and 4.5.2. Lack of drugs and low utilisation implies that the health personnel are underutilised. It is imperative to note that the variable for medical staff was included to search for any effects of medical staff on hospital efficiency because this may also indicate an overall inefficiency of other inputs such as equipment, and overall quality of services. None of the other probability values are significant implying

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that they are not significant determinants of the probability, or stated differently, they least explain the expected value for hospital efficiency.

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CHAPTER 5: DISCUSSION OF STUDY FINDINGS

5.1 Introduction

This study investigated the impact of decentralisation of financial management on hospital efficiency using Data Envelopment Analysis and regression models. Based on the results, perhaps one could ask the following guiding questions: are the health facilities providing effective and efficient quality health care, now that they are able to spend the retained revenue without seeking approval from Ministry of Health headquarters? Have the health facilities become more efficient as a result of financial decentralisation or in absolute sense? How far are the facilities operating below their optimal levels?

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5.2 Survey Results

Low utilisation of hospital services is a major cause of technical inefficiency in the public health sector in many developing countries (Barnum and Kutzin 1993). In this connection, this study investigated the extent to which utilisation has been affected by fiscal decentralisation.

Using annual attendance data from the sampled facilities, the study assessed the difference between the mean utilisation rates before and after the implementation of the policy. According to the findings, (see appendix 1), the effects on utilisation have been mixed. The results reveal no significant difference in utilisation rates between the periods considered (appendix 1). However, the mean difference for 1994 and 1998 is significant (t-value = 2.5407) implying a significant difference in utilisation rates in these two years. However, with the exception of a few facilities, there appears to be no significant changes

in utilisation rates. The results generally imply that financial decentralisation did not improve utilisation of services on a large scale. From the interviews, it was revealed that most of the facilities have registered a decline in utilisation.

Although utilisation does not seem to be significantly different before and after reform, there are a few key constraints to utilisation. First, the results generally imply that the cost of care may have adversely affected utilisation of services in the sampled facilities. For instance, from the interviews, it was revealed that the majority of patients (56% of inpatients and 58% of outpatients) indicated that the cost of health care was fairly expensive or expensive.

Secondly, low utilisation could be due to poor quality of services. As noted earlier, 69% of the outpatients and 66.7% of the inpatients reported that they were dissatisfied with the services provided because of the shortage of drugs and inadequate and deplorable bed and linen while the majority (66.7%) of health personnel reported that the services had deteriorated. Thirdly, the additional revenue arising from the cost sharing programme appears not to have been utilised to purchase basic inputs such as gloves, syringes maintaining cleanliness, x-ray and laboratory services and maintaining an effective system for referral purposes. Fourthly, misuse and mismanagement of the revenue collected, low staff morale, and a decline in expenditure budget in real terms means that essential purchases could not be purchased.

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Perhaps the low perceived quality of care and unreliability of services at the lower-level facilities could explain why majority of the patients bypass lower level facilities and refer themselves directly to a higher level. Based on Kenya's bottom-up referral policy, lower level facilities are supposed to refer patients to higher facilities. Decentralisation of financial management was expected to provide a basis for the inherent graduated fee structure along the different tiers in the health care system. In this way, services would be provided in a more cost-effective manner. Contrary to the study expectations, the survey findings reveal that a significant number of patients (58.9% of inpatients and 67% of outpatients) bypassed the lower level facilities directly to higher facilities.

The above results have adverse implications for the effectiveness of decentralisation in improving the referral system. Considering that primary health facilities are endowed with the capacity to effectively handle Preventive and Primary Health care (P/PHC), the emerging scenario clearly shows that the proportion of revenue earmarked for P/PHC has either not been used properly or is inadequate. Further, inefficient referral system adds to the economic inefficiency in the delivery system because the higher facilities become overcrowded with basic cases and patients incur waiting costs which could have been avoided by ensuring that these facilities provide a reliable and adequate quality services. These areas are among the major sources of inefficiency in the public health sector (Gilson 1995, Beatie *et.al* 1996, Zhang and Zoü 1997 and Cohen *et.al* 1995).

In a way therefore, financial decentralisation appears to exacerbate the ineffectiveness of the referral system. This makes it difficult to improve the quality and availability of

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P/PHC at the lower level of the health system. Therefore, in order to streamline the referral system, the constraints preventing utilisation of services at the lower level facilities merit urgent attention.

As noted earlier, fiscal decentralisation of cost sharing revenue was meant to address some of these quality problems. However, from the survey results, it was found that most of the facilities studied did not meet the revenue targets and had cost recovery ratio of 5% or less. This finding concurs with the data on annual revenue trends shown in section 4.1.3. The results are consistent with other findings (Beatie *et.al* 1996; Barnum and Kutzin 1993; Kutzin 1995) which have reported a cost recovery of 5% of total recurrent health systems expenditure. It is, however, important to emphasise that these studies were done when the management of user fee revenue was still centralised in most of the countries under which they were carried out. In the Kenyan context, if the targets are realistic, then these results could be a reflection of poor financial management and high cost of health services noted earlier. The problem could also be attributed to low quality of service (proxied by drug availability, courteous staff, waiting time etc) which implies less demand for hospital services, thus limiting the potential self financing base of the facilities.

In addition to inefficiency in revenue collection, it is evident from the survey results that a significant number of the facilities have not been able to use the revenue generated. There are two possible explanations for this. Firstly, from the staff survey, it was revealed that the performance of the district treasury is poor. The district treasury is mandated to

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oversee the maintenance of all government accounting procedures at the district level including those of the Ministry of Health. In the case of management of revenue generated by health facilities, it was revealed that the district treasury has been ineffective as evidenced by poor banking performance and use of revenue collected before banking. In addition, the majority of staff (75.4%) who, were interviewed considered the district treasury to be inefficient in processing hospital claims. It was also critised for delays in issuing counter-checks and in releasing funds.

Secondly, the poor performance of the district treasury could also be attributed to lack of accountability among the district accountants. The accountants are under the office of the president, but in the district they are in charge of financial information and management of funds including those of the MOH. They are not, therefore, directly answerable to the MOH managers at the district level. Furthermore, hospital managers have limited authority over revenue expenditure and control. It is not surprising then, that there is a delay in the procurement of drugs as reported in most facilities and an evident low quality of health care services.

From the above, it can be inferred that efficiency of revenue collection is not based on whether or not financial decentralisation has taken place but whether hospital managers have the incentive to enforce the fee collection. It is important to note that the present financial decentralisation system provides little incentive for hospital managers to make strong efforts to collect fees, lack of accountability among the district accountants and high bureaucracy of the district treasury in managing the revenue collected. This is also a

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reflection of the ambiguity of the definition of managerial authority and responsibilities of health managers. Hence, going by these results, it could be argued that many health facilities rarely utilise the revenue generated to ensure efficient supply of inputs or perhaps, the limited form of decentralisation is inadequate as a means of addressing the high levels of inefficiency noted earlier. In any event, lack of inputs restricts access to health services and coverage, as patients would seek alternatives that provide better health care (Braveman 1998, Beatie *et.al* 1996).

The above results suggest that there is a need to address the problem of quality of services as measured by lack of or poor distribution of drugs and medical supplies, poor combination of inputs and staff imbalance. Improvement in the quality of care would ultimately increase utilisation levels. In addition, there is a need to consider the other inputs such as beds and health personnel. In the case of beds, the health managers and planners need to consider the possibility of closing some wards. Alternatively, the hospital management could consider privatising some of the under-performing departments or unused beds. These policy options however need to be treated with caution because improvements in the quality of care may increase utilisation levels and hence, the need for re-opening the wards again or supplying more beds. On the other hand, privatisation may exacerbate staff imbalance and ultimately low quality of service as the medical officers shift their services to the private section. The results in this section point to a need for further research or additional information on staff mix. This is critical because as noted earlier, staff imbalance contributes to inefficiency because it interferes with the proper combination of inputs.

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As revealed in the literature review, the most important condition for the success of fiscal decentralisation is managerial capacity. For the health managers and other staff directly involved in the implementation of the policy reform to be able to assess the performance of the health facilities and/or offer technical assistance required, they need appropriate skills, such as capacity for financial or personnel management. In addition, there is definitely a need for information system to provide the relevant and accurate data to the appropriate level of management when needed to improve decision-making.

To address the problem of accessibility to health care services, there is need to strengthen the exemptions and waiver system in order to ensure that the vulnerable are not denied access to health care services. Further, for the policy of fiscal decentralisation to work, the responsibilities of health managers need to be accompanied by authority over revenue expenditure. Similar observations have been made by Reagon *et.al* (1997), Mwabu *et.al* (1995), Beatie *et.al* (1996) and Cassels (1995).

The effectiveness of the policy could also be improved by establishing clear working relationships among various task networks. Of critical concern is the financial relationship between district treasury and the health facilities and the means by which performance is to be monitored. It is equally important to identify a mechanism that would ensure accountability for the use of the revenue collected. There is also a need to identify the critical personnel required for the effective implementation of the policy.

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There is need for more authority and appropriate strategies to correct the current inefficiencies and improve the quality of services. This may require empowering the medical officers of health by allowing them to recruit key personnel to manage the revenue collected. This requires political commitment and further training of the district teams on financial management. The findings also provide a strong case for the need to have tighter financial monitoring and information systems. These would provide a benchmark against which financial performance and accountability could be assessed. Also, given the limitations of raising adequate revenue it would be necessary for the health managers to seek alternative sources of funding in order to ensure adequate and regular supply of health care inputs.

From the forgoing, it is evident that major inefficiencies existed before reform. Fiscal decentralisation reform by itself could not address all the causes of hospital inefficiency. In this regard, a more comprehensive approach is needed to address inefficiencies and possibly improve on quality and equity in health care delivery.

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5.3 DEA EFFICIENCY RESULTS

It was expected that fiscal decentralisation would result in improved efficiency in the delivery of quality services. However, evidence from the study findings revealed that, contrary to expectations, decentralisation of financial management has had minimal impact on hospital efficiency. Technical efficiency scores computed using data envelopment analysis and the regression results have shown that the performance of health facilities have deteriorated in technical terms. For instance from Table 4.5 the

overall inefficiency[6] for facilities in 1994 was 54 per cent, that for 1995 was 37 per cent while that for 1997 and 1998 was 45 and 42 per cent respectively. These results imply that the inefficient hospitals should be able to reduce the use of all inputs by 54%, 37%, 45% and 42% respectively. Although inefficiency appear to have increased in the post reform period, the results show that there was already an astonishing degree of inefficiency in the health care system even before the implementation of the reform. Based on these findings, it is clear that, wastage of resources still persist despite the decentralisation of financial management of the cost sharing revenue.

As noted earlier, the hospitals with a scale efficiency (SE) of one have the most productive size for the specific input-output matrix (Kirigia *et.al* 1999; Banker *et.al* 1986; Eyob 2000). The results presented in Table 4.5 show that, the average scale efficiency is 77%, 71%, 76% and 73% for 1994, 1995,1997 and 1998 respectively. These results imply that the hospitals are operating below their most productive size for their observed input mix. Only a few hospitals (3, 4, 4, and 3 out of the 39 hospitals for 1994 to 1995 and 1997 to 1998) are operating at their most productive scale sizes as indicated by the constant returns to scale (CRS). The remaining 13, 15, 23 and 20 hospitals for the above mentioned period exhibit increasing returns to scale, whilst 23, 20, 12 and 16 exhibit decreasing returns to scale.

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[6] As noted earlier, a hospital with a score of 1 is said to be technical efficient, whilst health facilities with less than 1 are technically inefficient. Based on this information, the level of inefficiency is measured by the difference between 1 and the actual efficiency score for each facility. In addition, a hospital which is censored below 1, produces less than it would have been expected to produce on the basis of the estimated probabilities of the censored Tobit model. Inefficiency level was computed by deducting the DEA efficiency score of each hospital from 1.

Based on the above results, the hospitals showing DRS would operate at the most productive size by scaling down its inputs and outputs. On the other hand, those facilities exhibiting IRS should expand their inputs and outputs.

5.4 ECONOMETRIC ESTIMATION RESULTS

Based on the findings in section 5.2, it is important to examine the causes of (in) efficiency. The section below discusses the variables estimated in equation 2 (i.e. decentralisation dummy, bed occupancy rate, medical staff, non-medical staff, number of beds and average length of stay).

The estimated regression coefficient pertaining to the dummy for financial decentralisation is positive but statistically insignificant at the 1% level. This finding concurs with the DEA findings of the existence of inefficiency in the health care delivery system. These results stand in stark contrast to the results obtained by Fare (1996) and Gerdtham *et.al* (1999). In the study by Gerdtham, the level of efficiency reported for the hospitals that implemented financial reforms was higher than the health facilities in the councils that did not implement the reform. The success of the Swedish reforms was attributed to comprehensive changes in organizational and financial structure, which allowed individual councils to develop their own management control systems. Other comparable results are those by Mogedal *et. al* (1995) which indicate that the locally raised revenues did not play a significant role in so far as efficiency improvement is concerned. In a way the results indicate that decentralisation of cost sharing alone without

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considering underlying causes of inefficiency, is an inadequate measure to address inefficiency in the health care system.

These results suggest that fiscal decentralisation has not improved efficiency in the delivery of health services. The study revealed that on average, hospitals continue to use more resources than they need to produce the levels of outputs they are presently producing. Moreover, as noted in section 4.3 most facilities continue to experience an irregular supply of essential inputs such as drugs which perhaps, explains why there is low productivity of staff. The implication here is that the health facilities could increase service provision (more outpatients and inpatients) with the same resources or reduce the resources they currently have or even lower the inputs for the same level of outputs. In essence, the operations and performance of hospitals could be improved if the revenue generated is better utilized to procure drugs and other essential inputs that improve the quality of care. Alternatively, the savings that could be generated from increased efficiency could then be channeled to other areas of need within the health care system.

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The coefficient for bed occupancy rate was found to be positive and statistically significant at the 1% level indicating that it is a significant determinant of efficiency. It is however, interesting to note that the average bed occupancy rate (that is, the percentage of total beds that are occupied by the patients) in the sampled facilities is 38% with significant difference between the hospitals considered. Compared to data from other countries such as Lesotho (129), Malawi (116), Ethiopia (59) and Zimbabwe (76) (see Barnum and Kutzin 1993: 94), Kenya has relatively low occupancy rates at the district

and sub-district levels[7]. Generally, bed occupancy levels should increase with hospital size. Perhaps, this is because hospitals at higher levels are assumed to be more productive and able to handle more referrals, case mixes and patients (Barnum and Kutzin 1993).

The results also show that efficiency is negatively, though insignificantly related to average length of stay (stated differently, *ALOS* is positively related to inefficiency). This result concurs with that shown in Table 4.8 suggesting that although the average length of stay is not worse than the average of Lesotho (9), Ethiopia (7.2), Malawi (9) and Zimbabwe (6.8), it deserves attention. This finding reflects technical inefficiency in hospital resource use. The most plausible explanation for this could be due to poor scheduling of diagnostic and therapeutic care that result from malfunctioning machines, unavailable health care inputs, lack of competent health personnel, lack of funds, staff and reagents cited earlier in section 4.2. These then may lead to problems in diagnostic tests, equipment failures and poor hospital management. On the whole, unnecessary long stay is a reflection of economic inefficiency and requires intervention in order to promote coverage and access.

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It is important to note that hospital bed occupancy levels and average length of stay have various policy implications. Firstly, as Bernum and Kutzin (1993) and Wagstaff (1989) note, low levels may indicate inefficiency, even in cases where the inputs are used with technical efficiency. Since input costs are spread over a small number of patients, the

[7] Interpretation of this result should be treated with caution because the study combined district and sub-district hospitals together. This may therefore not be a true reflection of bed occupancy levels in Kenya. Nevertheless the variable is important in this study because its effects are implicitly captured in the computation of efficiency scores in the DEA model.

average cost of health services per episode increases. Secondly, unnecessarily long length of stay makes maintenance and management costly (notice the negative effect of *ALOS* on hospital efficiency). If hospitals were operating efficiently, then, one would expect high occupancy rate and low lengths of stay.

As revealed in Table 4.8, the coefficient for medical staff is negative and statistically significant at the 5% level. This result shows that productivity among the medical staff is noticeably low and negatively associated with technical efficiency, notwithstanding the decentralisation of financial management. A similar finding was reported for non-medical staff. A question would then arise as to what reasons could be advanced to explain the negative impact of health staff on efficiency. In the first instance, their productivity could be low due to low bed occupancy, which means that the staff have little work to do. Our field discussion with health personnel also reveals that, most facilities lack drugs and other essential inputs, most of the staff are not involved in planning for the services needed in their sections and normally receive less than what they have requested. Based on the above, the study concludes that the working environment in the health facilities does not provide the appropriate type of incentives required in a decentralized environment. In addition, the survey finding shows that commitment and dedication to work among the staff is lacking as a result of the above factors. Therefore, if the policy is to work effectively, there is a need to pay attention to issues affecting staff productivity. In this regard adequate supply of drugs and distribution problems, involvement of staff in decision making (particularly on issues affecting section operations), timely and adequate

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medical supplies, incentives to health personnel for better performance, effective supervision and remuneration of personnel merit urgent attention.

Using beds as a proxy for installed capacity, the regression results indicate that technical efficiency is negative, but insignificantly influenced by the number of beds. Although the negative correlation is statistically insignificant, it suggests the existence of excess capacity in the public health facilities. This implies that beds in inefficient hospitals in the study sample are too many for the output being produced. Stated differently, it means that the cases of outpatients and inpatients recorded by the 39 facilities studied could be produced by fewer facilities, if resources were utilized more efficiently.

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CHAPTER 6: SUMMARY AND CONCLUSIONS

6.1 Summary of key findings

This study focused on the impact of decentralized financial management system under the cost-sharing scheme on efficiency, quality and access to health care. It has been argued in policy documents that the reform would enhance efficiency of health facilities in service provision. The study involved assessment of patient and staff survey - quality of care, access and hospital efficiency using Data Envelopment Analysis. Using hospital inputs and outputs and the DEA approach, it was possible to generate efficiency scores for each of the 39 sampled facilities for the specified period.

The findings revealed that utilisation of health care services, quality of services, access and revenue collection have not improved. The study indicated that utilisation rates have remained low suggesting that fiscal decentralisation has not been effective in enhancing access to health care services. This failure is partly attributable to the structure of the financial management system, which does not provide incentives to the health managers. Other factors include lack of authority and autonomy of health facilities over the revenue generated, an inefficient district treasury and unavailability of certain health care inputs such as drugs. In such circumstances health care managers cannot be expected to effect the policy reform if they are expected to work with a limited and uncertain flow of resources and authority.

In terms of efficiency of revenue collection, it is interesting to note that an overwhelming majority of the sampled facilities (93%) collected less than what they could potentially

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collect and only (7%) of these were able to meet the set targets. Moreover, it was reported that the revenue banked was actually less than what was collected. Ideally the health facilities are supposed to bank 95% of the revenue collected and retain 5% for emergency cases. According to the survey findings the difference arise due to spending before banking, theft or fraud. While assigning expenditure responsibilities to health managers would enhance accountability and transparency in the use of the revenue generated, there is need for sound financial system to support and ensure up-to-date information on financial resources and use.

With regard to budget allocation to health facilities by government, the majority of the staff indicated that recurrent expenditure on health has declined in real terms. This finding concurs with the findings by Kireria and others in 1999. This has contributed to lack of health facility inputs (drugs and supplies etc). As a result the quality of care has continued to decline below acceptable levels, while the health care facilities are underutilised as noted earlier. This situation is critical in view of the inadequate and inefficient collection of revenue. The key policy issue here is that the MOH should continue to make adequate budgetary provisions to support operations of the health facilities. There is also a need for better co-ordination between the decentralised financial management systems, NGOs and donors as well as considering a more comprehensive health sector reform e.g. decentralisation of health personnel recruitment. This is necessary in order to ensure accountability of health personnel.

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With regard to efficiency, the study results point out that efficiency in health care facilities was lower in the post-reform period compared to the pre-reform period. The average efficiency level for 1994 was 46% that for 1995 was 63% and 55% for 1997 while that for 1998 was 58%. As noted earlier, an efficient hospital should have a score of 100%. These results show that inefficiency is wide spread in most of the facilities studied. The inefficiency can probably be attributed to general mismanagement, particularly that relating to financial management, lack of drugs and medical supplies, low staff productivity and commitment to duty. Given the high level of inefficiency in the health care delivery system prior to the introduction of the reform, decentralisation of financial management alone, without paying attention to the wide range of other efficiency constraints identified, may not achieve the stated goals of this reform.

A larger number of hospitals were found to exhibit some degree of scale inefficiency with the majority showing DRS and IRS. The mean scale efficiency was 77 per cent, 71 per cent, 76 per cent and 73 per cent for 1994, 1995, 1997 and 1998 respectively. These results shows that most of the facilities are not operating at their most optimal scale size both in the pre and post reform period. The led to the conclusion that decentralization of financial management has led to very minimal improvement in hospital performance. This is not surprising given that most of the hospitals were experiencing high levels of inefficiency even before the decentralization. Moreover, the partial fiscal decentralization and other facility specific constraints identified earlier on, make realization of better performance almost impossible.

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These findings have some implications to the health sector in Kenya as it moves to decentralise the entire sector through the release of block grants. The decentralisation of financial responsibilities of cost sharing revenue to the district health facilities. without addressing the other efficiency constraints identified, has not yielded the required results. From a policy perspective. the important lesson to learn from these results is that, the resource base of the facilities could be enhanced or saved by addressing more comprehensively factors that impact on efficiency. Fiscal decentralisation should not therefore be viewed as the ultimate solution to ensuring efficient service delivery. It needs to be supported by other strategies.

Another key policy issue that merit attention is the question on how to improve efficiency of the various task networks and in particular the financial relationship between district treasury and health care managers, and the means by which performance is to be monitored. This issue becomes even more crucial in view of the continued inefficiency in the health service delivery system. The implication is that significant gains from financial decentralisation could be realised by granting more expenditure responsibilities and autonomy on budget making to health care managers. This should however be followed by a "hard budget constraint" to ensure that health facilities provide services efficiently and within their means as well as making the managers accountable for their actions.

Another area of the task network that needs attention is that of medical supplies. Perhaps, additional financing from the MOH and or honouring its budget allocations or better management of the cost sharing revenue could ensure better delivery of services. There is

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also a need for better stock management to control pilferage at the facility level, and closer co-ordination of MOH and donor supplies in order to improve efficiency in the supply of drugs and other medical supplies. In addition, health managers need to be given more authority and autonomy to use the revenue in order to sustain drug supplies. To ensure effective co-ordination of the various activities suggested, it is important to improve the management of facilities.

Promoting effective utilisation of health care inputs is a pre-requisite for reducing inefficiency in the procurement of drugs, delays in distribution within the facilities and supply of the required quantities by the central medical supplies department and the medical stores within the health facilities. In this regard, estimates for the requirements should be done by individual hospitals with inputs from all the heads of departments. In addition, the health facility managers should be given flexibility in purchasing drugs from the Medical Supplies Co-ordinating Unit (MSCU), perhaps by using the funds allocated from the treasury. However, given the limited recurrent expenditure allocation by the government, it may be prudent to improve efficiency in the collection of cost sharing revenue.

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In addition to the above suggestions, the following issues merit attention: There is a need to look carefully at staff mix and levels and/or improve human resource management. There is also a critical need to review bed numbers and carefully consider options for reducing them given the low bed occupancy rate.

Finally, in addition to addressing the constraints identified above, there is a need to look at the issue of monitoring efficiency at the facility level. It was highlighted in the study that the facilities could make savings if the available resources are utilised efficiently. So far, apart from policy statement concerning efficiency, there are no indicators that the health managers are in a position to assess the operations of their institutions. Thus, from a policy perspective, there is a need to establish specific guidelines for addressing inefficiency in the health care sector. This will require designing of monitoring instruments for health managers that will enable them to identify not only sources of inefficiency within their health facilities but also those which present the greatest opportunity for real improvements in health care delivery.

6.2 SPECIFIC RECOMMENDATIONS

- Given the limitations of this study, there is definitely a need to conduct a comprehensive analysis of efficiency as well as resource base of the health care system. However, to achieve the objective of enhancing efficiency and quality of care, it is important to collect data on a regular basis. Therefore, in order to ensure sound decision-making, the study recommends that a systematic data collection exercise be established. The starting point would be to develop National Health Accounts to collect expenditure, fee revenue, other input and output data on health institutions in the country for use in efficiency analysis. This is necessary because the strength and reliability of DEA methodology depends on the availability of adequate and quality data.

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- Based on this conclusion, the study recommends that some bench marks be explored using indicators drawn from health facility inputs and outputs. These will form the basis for monitoring efficiency in the delivery of health care services under the reform programme. In addition, there is a need to examine hospital specific determinants of efficiency and the relationship between the health facility and other institutions that have a direct effect on their performance.

- Training is an important element of the reform process. There is therefore, a need for suitably trained health professionals or managers to take on managerial roles, which combine technical, financial and administrative responsibilities. Such skills are necessary in order to monitor spending and performance as well as other facility resources. As noted above, this requires among others, tools or instruments for assessing efficiency in service delivery.

In light of the above recommendation, the feasibility of starting an efficiency analysis unit, probably to be located at the provincial level. The function of the unit would involve information gathering on inputs and outputs from district health facilities, and assess using identified indicators, the efficient utilisation of these inputs in service delivery, equity, access and on exemptions. Such a unit would requires development of capacity at the provincial level. Alternatively, the health managers need to be trained on efficiency measurement approaches so as to be in a position to monitor efficiency within their health facilities.

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- Motivation and incentives to health personnel is important and need to be considered in the current policy reform. Perhaps, the health facility managers could consider avenues through which the additional revenue generated within the facilities could benefit the staff. By addressing the weaknesses of the reform policy identified in the study as well as effective utilisation of the revenue in enhancing quality of services provided, it is likely that more patients would be attracted. It is also possible that with improved planning and organisation, the additional revenue generated and savings from improved efficiency could be reallocated to supplement health inputs and improve the quality of services especially at lower levels to improve referral systems.

6.3 SUGGESTIONS FOR FURTHER RESEARCH

This study reviewed the effect of fiscal decentralisation under the cost sharing reform programme on hospital efficiency. As such, detailed analysis of inputs and outputs of health facilities required for measuring efficiency and equity issues was beyond the scope of this study. Therefore, in view of the current emphasis on efficiency in health care sector reforms, there is need for further research on the measurement of efficiency, resource base of health facilities and on the issues pertaining to improvements of efficiency. Here Data Envelopment Analysis (DEA) may well prove a useful tool. The DEA model for example would enable health managers or planners, not only to identify tools for efficiency monitoring and evaluation, but also identify inefficient health facilities and inputs that can be reduced and by how much. This will provide an important planning tool especially now when the focus of health sector reform is on improving efficiency, equity and quality of care. These issues are therefore worth exploring.

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Appendix 1

Table 4.1a The difference between mean attendance before and after Implementation of the reform policy (inpatient)

Year	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
1994	39	5943.718	843.3949	5266.999	4236.354	[illegible]
1997	39	6789.513	1162.874	7262.145	4435.398	[illegible]
diff	39	-845.7949	534.8798	3340.323	-1928.602	[illegible]

Ho: mean (1994 – 1997) = mean(diff) = 0

Ha: mean (diff) < 0	Ha: mean (diff) ~= 0	Ha: mean (diff) > 0
t = -1.5813*	t = -1.5813 *	t = -1.5813*
P < t = 0.0611	P > |t| = 0.1221	P > t = 0.9389

* No difference in utilisation rates

The difference between mean attendance before and after Implementation of the reform policy (inpatient)

Year	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
1995	39	6381.077	866.4696	5411.101	4627.001	8135.153
1998	39	6404.923	954.3288	5959.781	4472.986	8336.861
diff	39	-23.84615	374.786	2340.538	-782.5608	734.8685

Ho: mean (1995 – 1998) = mean(diff) = 0

Ha: mean (diff) < 0	Ha: mean (diff) ~= 0	Ha: mean (diff) > 0
t = -0.0636*	t = -0.0636*	t = -0.0636*
P < t = 0.4748	**P > |t| = 0.9496**	**P > t = 0.5252**

*** Not statistically different from zero**

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Table 4.1b The difference between mean attendance before and after Implementation of the reform policy (inpatient)

1994	39	5943.718	843.3949	5266.999	4236.354	7651.082
1998	39	6404.923	954.3288	5959.781	4472.986	8336.861
diff	39	-461.2051	367.9182	2297.648	-1206.017	283.6063

Ho: mean (1994 - 1998) = mean (diff) = 0

Ha: mean (diff) < 0	Ha: mean (diff) ~= 0	Ha: mean (diff) > 0
t = -1.2536*	t = -1.2536*	t = -1.2536*
P < t = 0.1088	P > |t| = 0.2177	P > t = 0.8912

Table 4.1c The difference between mean attendance before and after Implementation of the reform policy (inpatient)

Year	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
1995	39	6381.077	866.4696	5411.101	4627.001	8135.153
1997	39	6789.513	1162.874	7262.145	4435.398	9143.628
diff |	39	-408.4359	547.7752	3420.855	-1517.349	700.4771

Ho: mea n(1995 - 1997) = mean (diff) = 0

Ha: mean (diff) < 0	Ha: mean (diff) ~= 0	Ha: mean (diff) > 0
t = -0.7456*	t = -0.7456*	t = -0.7456*
P < t = 0.2302	**P > |t| = 0.4605**	**P > t = 0.7698**

*** No difference in utilisation rates**

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QUESTIONNAIRE FOR OUTPATIENT INTERVIEWS

Exit Interviews

Date: ------------------

Enumerator's Name: ----------------------------------

To the interviewee,

This interview schedule is designed to collect data for the purpose of assessing decentralisation of the cost recovery revenue reform and its impact on hospital efficiency and health care delivery in Kenya. Your views on the quality of service are important in helping us assess whether the decentralisation reform is meeting its intended objectives or not. Please feel free to give information on the questions asked. All the information you give will be treated with strict confidence.

Thank you for your cooperation

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A. Information about patient

1. Gender of respondent

Male	1
Female	2

2. How old will you be at your next birthday?

-------------- Years

3. Referral status: were you referred to this hospital?

Referred	1
No referral	2
Bypass	3
Not applicable	4

4. If referred, indicate level of referring facility

Dispensary	1
Health center	2
Private clinic	3
Others (specify)-- --------------------- ---------------------	4

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B. Patients Perceptions of quality of service

5 How do you rate the quality of service in this hospital?
(Please tick the relevant box)

	Excellent	Good	Fair	Poor	Don't know
Availability of qualified personnel					
Courtesy of reception staff					
Cleanliness					
Waiting time					
x-ray/lab services					
Reliable supply of drugs					
Overall quality of service					

6. How would you rate the waiting time?

Short	1
Average	2
Long	3
Too long	4

7. How much time did the doctor/nurse spend with you in examining and treating you?

5 minutes or less	1
15 minutes or less	2
About ½ hour	3
More than 30 minutes	4

8. In your opinion, did the nurse or the doctor spend adequate time with you?

Yes	1
No	2

9. Were you comfortable with the language, which the doctor/nurse used?

Yes	1
No	2

10. Would you have preferred another language?

Yes	1
No	2

11 To what degree did you feel understood by the nurse/doctor?

Very well	1
Well	2
Only partly	3
Not at all	4

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12. After this visit, to what degree do you feel your symptoms have been addressed?

Very well	1
Well	2
Only partly	3
Not at all	4

13. To what degree do you feel your concerns have been resolved?

Very well	1
Well	2
Only partly	3
Not at all	4

14. Are you satisfied with the care provided in this hospital?

Yes	1
No	2

If NO, GO to Question 15 ELSE, GO to question number 16

15. What are the reasons for dissatisfaction?

Shortage of drugs and other critical supplies	1
Medical staff not courteous	2
Unavailability of staff	3
No specialised treatment	4
Waiting time too long	5
Long outpatient queues/jumping queues	6
Others (specify)---------------------------------- -- --	7

16. In your opinion, do you feel that the fee revenue collected is adequately utilised?

Yes	1
No	2

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17. What in your opinion are the three most important things that hospital administrators could do to improve health care delivery? **Indicate which is the most important (mark with 1)**

----

18. Do you find in general, the cost of health care is

Very expensive	1
Fairly expensive	2
Slightly expensive	3
Not at all	4

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QUESTIONNAIRE FOR INPATIENT INERVIEWS

This interview should be conducted with patients at each hospital. Patients can be randomly selected as they are leaving the facility.

Date: -----------------

Enumerators Name: ---------------------------------

To the interviewee,

This interview schedule is designed to collect data for the purpose of assessing decentralisation reform and its impact on efficiency and health care delivery in Kenyan hospitals. Your views on the quality of service are of paramount importance in assessing whether the reform is meeting its intended objectives or not. Please feel free to give information on the questions asked. All the information you give will be treated with strict confidence.

Thank you for your cooperation

University of Cape Town

A. Information about patient

1. Gender of respondent

Male	1
Female	2

2. How old will you be at your next birthday?

------------- years

3. Referral status: were you referred to this hospital?

Referred	1
No referral	2
Bypass	3
Not applicable	4

4. If referred, indicate level of referring facility

Dispensary	1
Health center	2
Private clinic	3
Others (specify)-- -------------------- --------------------	

5. If the answer to question 4 is "no referral/bypass" what are the reasons for bypassing the appropriate health facility?

Long waiting time	1
Lack of drugs	2
Lack of diagnostic tests	3
Incompetent health workers	4
Others (specify)	5

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6. How do you rate the quality of service in this hospital?
(Please tick the relevant box)

	Excellent	Good	Fair	Poor	Don't know
Availability of qualified personnel					
Courtesy of reception staff					
Cleanliness					
Waiting time					
x-ray/lab services					
Reliable supply of drugs					
Overall quality of service					

7. How would you rate the waiting time?

Short	1
Average	2
Long	3
Too long	4

8. How much time did the doctor/nurse spend with you in examining and treating you?

5 minutes or less	1
15 minutes or less	2
About ½ hour	3
More than 30 minutes	4

9. In your opinion, did the nurse or the doctor spend adequate time with you?

Yes	1
No	2

10. Were you comfortable with the language, which the doctor/nurse used?

Yes	1
No	2

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11. Would you have preferred another language?

Yes	1
No	2

12. To what degree did you feel understood by the nurse/doctor?

Very well	1
Well	2
Only partly	3
Not at all	4

13. To what degree do you feel your symptoms have been addressed?

Very well	1
Well	2
Only partly	3
Not at all	4

14. To what degree do you feel your concerns have been resolved?

Very well	1
Well	2
Only partly	3
Not at all	4

15 Are you satisfied with the care provided in this hospital?

Yes	1
No	2

If NO, GO to Question 16 ELSE, GO to question number 17

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16. What are the reasons for dissatisfaction?

Shortage of drugs and other critical supplies	1
Medical staff not courteous	2
Unavailability of staff	3
No specialised treatment	4
Waiting time too long	5
Long outpatient queues/jumping queues	6
Others (specify)--------------------------------------- -- ------------------------------------	7

17. In your opinion, do you feel that the fee revenue collected is adequately utilised?

Yes	1
No	2

18. What in your opinion are the three most important things that hospital administrators could do to improve health care delivery? **Indicate which is the most important (mark with 1)**

----

19. Do you find in general, the cost of health care is

Very expensive	1
Fairly expensive	2
Slightly expensive	3
Not at all	4

University of Cape Town

Fiscal decentralisation and its impact on efficiency and delivery of health care service in Kenyan Hospitals.

Questionnaire for Hospital staff: (key informants: medical officers of health, medical superintendents, matrons, pharmacists and hospital clerks/accountants)

Dear respondent,

This questionnaire is designed to collect data for the purpose of assessing the impact decentralisation of cost recovery revenue on hospital efficiency and health care delivery in Kenya. Your views will be very helpful in determining whether the reform is meeting its intended objectives or not. Please feel free to provide information on the questions asked. ***All information you give will be treated in strict confidence.***

Thank you for your cooperation.

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A. Staff Background:

1. Occupational title---

2. Highest (formal) education level attained --

3. How long have you been in the public service?

Less than a year	1
Between 1-4 years	2
Between 5-9 years	3
Over 9 years	4

B: Revenue collection and use.

4. Are you aware of decentralisation of financial management reforms that is in force?

Yes	1
No	2

5. What would you say is the objective of fiscal decentralisation reforms?

----

6. Do you have fee revenue collection targets?

Yes	1
No	2

7. IF YES, have you been able to meet the target?

Yes	1
No	2

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8. IF your answer to question 4 is NO, give reasons?
(Please tick one or more of the appropriate boxes)

Poor financial management	1
High staff absenteeism	2
Low supervisory visits and meetings by DHMBs	3
Embezzlement of funds/pilferage	4
Inappropriate recording and reporting systems	5
Unauthorized exemptions	6
Others (please specify)------------------------------------- --- ---	7

9. When should fee revenue be banked?
(Please tick only one of the following boxes)

Same day	1
Following day	2
Once in a week	3
Don't know	4

10. In your opinion do collections correspond/equal the amount banked?

Yes	1
No	2

11. If answer to Question 7 is **NO**, give reasons or **ELSE GO TO question 9.**

Theft of funds	1
Spending before banking	2
Fraudulent spending	3
Spending without authority	4
Other (Please specify	5

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12. Does the policy permit cash revenue to be spent before banking?

Yes	1
No	2

If answer to 9 above is **YES**, explain under what circumstances---------------------
----

Expenditure

13. In your opinion, who should be involved in the planning and management of revenue generated by cost sharing?

----

14. Who is responsible for approval of authority to incur expenditure (AIE)?

PMOH	1
DMOH	2
DHMTs	3
DHMBs	4
Others (specify)---------------------------- -- --	5

15 In your opinion are there cases of conflict in roles in relation to AIE's between the different structures (MOH, DHMT/DHMBs)?

Yes	1
No	2

16. Are you aware of how the revenue collected at the facility should be spent?

Yes	1
No	2
Don't know	3

17. If you answer to question 14 is YES, how should the revenue retained spent? **(Please tick one or more of the appropriate boxes)**

Purchase of drugs	1
Buying equipment	2
Building maintenance	3
Additional staff	4
Buying hospital linen	5
Maintenance of vehicles	6
Giving subsidy to poor	7

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Transport	8
Staff incentives	9
Medical stationary	10
Other (specify)------------------------- -- ----------------------------------	11

18. In your opinion, has the district treasury performed its function of overseeing the adherence of laid down accounting procedures?

Yes	1
No	2

19. If your answer in 16 is No, in which ways?

Delays in getting AIE's	1
Delays in releasing funds	2
Diversion of funds	3
Delays in issuing counter-checks	4
Lack of accountability among district accountants	5
Others (specify)--- ---	6

20. In your opinion, has the Ministry of Finance used the existence of cash revenues retained by hospital to reduce the budget allocation?

Yes	1
No	2

21. In your opinion, what problems are related with the implementation of financial Decentralisation reform?

Lack of skilled staff	1
Lack of equipment/vehicles for supervision	2
Lack of clear policy to implement the policy	3
Lack of orientation and training of hospital staff	4
Lack of monitoring and supervision by MOH. DHMBs/DHMTs	5
Other (specify)--- --- ---	6

22 Does your facility experience problems related to drug availability?

Yes	1
No	2

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23. If your answer to question 20 is YES, what is the average length of drug stockout?

One week	1
One month	2
Over a month	3

24. In your opinion, what factors are responsible for problems relating to drug supply and use?

Poor stock management	1
Procurement problems	2
Delays in distribution	3
Inadequate funding	4
Un anticipated demand	5
Pilferage	6
Inadequate transport to distribute drugs	7
Others (specify)-- --	8

Transport services

25. In you opinion, are the hospital vehicles in good running condition?

Yes	1
No	2

26. If answer to 22 is NO, why are they grounded?

Poor service/maintenance	1
Lack of funds	2
Old	3
Other (specify)-- --	4

27. In your opinion what problems have the hospital experienced from non-operational vehicles?

High operating costs and maintenance	1
Inadequate transport	2
Inability to carry out supervision of primary/preventive care activities	3
Inability to deliver inputs-drugs &medical supplies	4
Transfer of referred patients is made impossible	5
Inability of DHMBs to conduct supervision of hospitals	6
Other (specify)-- --	7

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28. In your opinion, do you think that the quality of services has improved as a result of fiscal decentralisation reform?

Yes	1
No	2

29. In what ways has the quality changed?
(Please tick one or more of the appropriate boxes)

	Greatly improved	**improve d**	**Not improved**	**Deterio rated**	**Don't know**
Availability of drugs					
Attitude of staff to patients					
Cleanliness of rooms, toilets etc					
Availability of x-ray services					
Availability of lab. Services					
Appearance of buildings e.g. (well painted, improved maintenance)					
Availability of adequate bed linen/blankets					
Availability and quality of food					
Competence of staff					
Improved staff morale					
Overall quality of service at this facility					

30. What is the most important thing you would like improved in this hospital?

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31. Are there any other specific issues that you feel should be taken into consideration in enhancing the success of fiscal decentralisation reform? --------------------------
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Thank for your cooperation in completing the questionnaire.

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