

**EFFECTS OF PUBLIC-PRIVATE PARTNERSHIP ON EFFICIENCY OF
HEALTH SERVICES DELIVERY IN UGANDA: A CASE STUDY OF
KAGANDO HOSPITAL IN KASESE DISTRICT**

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DECLARATION

I do hereby declare that the work presented in this dissertation has not been presented for any award in any institution. All work is original unless otherwise acknowledged.

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APPROVAL

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DEDICATION

This piece of work is dedicated to my mother Julia Kahindo (Mrs) and the soul of my father Mr (RIP) Andrew Kahindo Kalengyo for ensuring selflessness in laying the foundation for my education. To my sons Asingya and Asimawe and my dear wife, Nelly for their endurance and the care they missed up to completion of this course.

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LIST OF ACRONYMNS

ANC	:	Antenatal Care
bn	:	Billion
CG	:	Central Government
CSOs	:	Civil Society Organizations
EPI	:	Expanded Programme on Immunisation
HSSP	:	Health Sector Strategic Plan
IP	:	Inpatient
KARUDEC	:	Kagando Rural Development Centre
MDGs	:	Millennium Development Goals
MFPEC	:	Ministry of Finance Planning and Economic Development
MOH	:	Ministry of Health
n	:	Number
NFP	:	Not-for-profit
NGO	:	Non- Governmental Organisation
Op	:	Outpatients
OPD	:	Outpatient Department
PHC	:	Primary Health Care
PHC CG	:	Primary Health Care Conditional Grant
PFP	:	Private-for-profit
PFI	:	Public Finance Initiative
PNFP	:	Private- Not- For- Profit
PPP	:	Public-Private Partnership

PPPH	:	Public-Private Partnership in Health
SUO	:	Standard Unit of Output
UBOS	:	Uganda Bureau of Statistics
UCMB	:	Uganda Catholic Medical Bureau
UMMB	:	Uganda Muslim Medical Bureau
UN	:	United Nations
UNDP	:	United Nations Development Programme
UPMB	:	Uganda Protestant Medical Bureau
WB	:	World Bank
WHO	:	World Health Organization

OPERATIONAL DEFINITIONS

Public-private partmership (PPP): the combination of a public need with private capability and resources to create a market opportunity through which the public need is met and a profit is made (Heilman, J. and G. Johnston, 1992)

Efficiency: The degree to which Inputs have been converted into Outputs.

Inputs: These are the resources needed to carry out a process or provide a health care service.

Outputs: These relate to the direct result of the interaction of inputs and processes in the system; the types and quantities of goods and services produced by an activity, project, or program (Yawe, 2006).

Seconded staff: This refers to the staff paid by government but who work in the private health units.

Government grants: The support both financial and in material form extended to health units to support health care service delivery.

Standard Unit of Output: This refers to a composite measure of hospital outputs from inpatients, outpatient department, antenatal care, immunization and deliveries.

User fees: The charge levied on patients for the services rendered.

Sales: This comprises revenue from sales such as scraps, equipment, trees, and books/bibles (hospital chapel).

Other incomes: This includes income from the following sources; rental income from kiosks, hospital canteen, and bicycle shelter, battery charging, maize mill, hire of hospital plates, guest house income and Interns hostel, Interest on bank accounts, foreign exchange gain and transport hire.

ABSTRACT

The extent to which public private partnership (PPP) strategy has enhanced efficiency in the health service delivery at Kagando Hospital is not well understood. This study was therefore undertaken to assess the extent to which of financial and human resources support through the PPP affect Kagando hospital's delivery of healthcare service; and determine the Standard Unit of Output for Kagando hospital and its relationship to human resource, cost of medicine, total costs and user fees.

The study used a time series study design with quantitative and qualitative techniques. The study used secondary data from hospital documents for the fiscal years between 1996/7 and 2006/7, a period for the existence of PPP in Uganda. Efficiency was determined using Standard Unit of Output (SUO) based on the health economics model developed by Giutsi (2002). Tables, charts, ratios and correlation coefficients were used to determine relationship of government financial and human resource support on hospital efficiency.

Results show that there was a general increase in government funding to the hospital over the eleven year period. Seconded staff also increased over the five year period and the main staff seconded by government to the hospital are medical doctors. Admissions, deliveries and surgical operations show an increasing trend while Immunisations, Antenatal Care (ANC) and Outpatient Department (OPD) attendances reveal a declining trend. Some outputs increased due to increase

in financial and human resource support to the hospital and other outputs reduced due to reduction in financial and human resource support to the hospital. The overall trend of SUO for the hospital reveals a declining trend while the overall trend of SUO per staff reveals an increasing trend.

The study found out that Government of Uganda through PPPH extended grants amounting to 18.4 % of the hospital budget over the eleven years. Government seconded staff to the hospital accounted for 9-14 % of the staff establishment. The trend of Standard Unit of Output reveals a reduction in access to health services while the trend of SUO per staff reveals efficiency.

The study recommends maintenance of government grants to the hospital and increase in the grants where possible and government should continue secondment of staff to Kagando hospital focusing on seconding more doctors.

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

The Public-Private Partnership in Health (PPPH) was initiated in 1997 by the Ministry of Health in Uganda with the support of a parliamentary resolution implementation in July 2000. In Uganda, the private sector can be broadly categorized into Private- for- Profit (PFP) and Private-not-for-Profit (PNFP) providers. The PFP group contains both formal and informal providers. Informal providers mainly include general merchandise, shops and traditional healers. There are also new non Ugandan systems of care such as the Indian and Chinese medical systems.

Involvement of the private sector is, in part, linked to the wider belief that public sector bureaucracies are inefficient and unresponsive and that market mechanisms will promote efficiency and ensure cost effective, good quality services (WHO, 2000). Another perspective on this debate is linked to the notion that the public sector must reorient its dual role of financing and provision of services because of its increasing inability on both fronts (Mitchell J., 2001). Under partnerships, public and private sectors can play innovative roles in financing and providing health care services.

Partnership has significant potentialities for achieving efficient and effective high quality health services. It aims to establish a functional integration and sustained operation of a pluralistic health care delivery system by optimizing the equitable use of the available resources and investing in comparative advantages of the partners. It ensures the utilization of the potentials of

both the public and private sectors (Barakat, 2003). The need to provide and improve the efficiency of the health system delivery has been gaining attention worldwide (Jamison et al, 2006). Many countries have introduced reforms with the goal of making health care more effective (Mattke et al, 2006).

In 2001, PNFP health sub sector in Uganda was commended as an indispensable subsystem that offered comparable better and acceptable quality of health care than government (Muwanga et al, 2001). They are under three umbrella organizations: the Uganda Catholic Medical Bureau (UCMB), the Uganda Protestant Medical Bureau (UPMB) and the Uganda Muslim Medical Bureau (UMMB). By 2002, the Bureaus together represented 78% of the 490 PNFP health units while the rest fell under other humanitarian organizations and community-based health care organizations (MOH, 2001).

In partnership with government, Kagando hospital receives government support from three main sources: Primary Health Care Conditional Grant (PHC CG), Essential Drugs and Personnel through secondment of medical staff (Kagando hospital, 2007). Human resource remains the central gist that determines the overall effects of the reforms (Rigoli, 2003). Kagando Hospital has been a beneficiary of the PPP since 1996/7. Like any other PNFP hospital in Uganda, the level of financial and human resource support and the extent to which such support has impacted on Kagando hospital's efficiency in delivery of health services to the community remains not well understood. This study was conducted to assess the effect of the financial and human resources support through PPP on efficiency of delivery of health services in Uganda using Kagando hospital as a case study.

1.1 Statement of the Problem

Like other Private –Not- For- Profit hospitals in Uganda, Kagando hospital faced financial and human resource challenges resulting from increased cost of drugs, staffing, and budget. In 1997, the hospital adopted the Public Private Partnership (PPP) in Health with the aim of improving hospital efficiency in health services delivery to the general population. In spite of the government financial and human resources support through the Public Private Partnership strategy, Kagando hospital management is not certain if the institution has gained substantial improvement in hospital efficiency with regard to service delivery especially hospital outputs such as admissions, outpatient department attendance, antenatal care, immunization and deliveries. Besides, the Standard Unit of Output (SUO) for Kagando hospital and its relationship to human resource, cost of medicines, total costs and user fees is not known. Whether Kagando hospital has gained efficiency in delivery of health services is a critical knowledge gap that needs to be addressed. Failure to appreciate positive effects of PPP on hospital efficiency may jeopardize future government support to the private -not -for -profit institutions and thus negating the aims for which the partnership was established. Thus, this study therefore sought to investigate the effects of public-private partnership on the efficiency of health service delivery at Kagando Hospital.

1.2 Study Objectives

1.2.1 General

The general objective of the study was to establish the effects of Public Private Partnership (PPP) on the efficiency of health services delivery at Kagando hospital over the period 1996/7 to 2006/7.

1.2.2 Specific

The study specifically aimed to:

1. Assess the extent to which the financial and human resources support through Public – Private Partnership affect Kagando hospital’s delivery of health care services.
2. Determine the Standard Unit of Output (SUO) for Kagando hospital and its relationship to human resource, cost of medicines, total costs and user fees.

1.3 Research Questions

1. How does the financial and human resources support through Public-Private Partnership affect Kagando hospital’s delivery of healthcare service?
2. What is the Standard Unit of Output and other efficiency indicators related to standard unit of output for Kagando hospital?

1.4 Significance of the Study

Little is known about how the financial and human resource support through the PPP has influenced Kagando Hospital’s ability to transform the inputs into health service delivery outputs. Measuring the hospital efficiency in delivery of health services will help to understand some of the disparities in performance as well as providing some guide in the reallocation of resources in the bid to close the inequity gap in service provision. Furthermore, the findings from this study, may guide health policy makers and planners in developing more effective strategies for efficient allocation of resources in government supported health facilities.

1.5 Organization of the Study

The study is organized in six chapters. Chapter one is the introduction, while the second chapter describes the literature review related to the topic studied. Chapter three is the methodology while the fourth chapter presents the results. The fifth chapter gives an account of the discussion of the key results. A summary of the conclusions and policy recommendations are presented in chapter six.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Public-private partnerships (PPP) were developed in the UK, where they are more usually known as the Public Finance Initiative (PFI). PPP/PFI is now being promoted across the world as the panacea for public sector capital investment. Uganda is one of the countries where this concept is being actively encouraged by its government. Public-Private Partnership (PPP) refers to public and private sector actors working together on the basis of shared objectives, strategies and agreed monitoring and evaluation criteria (Ahmed, 2000).

The Uganda MOH defines the term partnership as “ The formal relationship between or more partners who have agreed to work together in a harmonious and systematic fashion and being mutually supportive towards common goals, including agreeing to combine or share their resources and/or skills for the purpose of achieving these common goals” (MOH, 2003).

In Uganda, the PPP in health was initiated in 1997 by the Ministry of Health with the support of a parliamentary resolution in July 2000. Within this resolution, the private sector can be broadly categorized into Private- for- Profit (PFP) and Private-not-for-Profit (PNFP) providers. The PFP group contains both formal and informal providers. Informal providers mainly include general merchandise, shops and traditional healers. There are also new non Ugandan systems of care such as the Indian and Chinese medical systems.

Operationally, the benefits of PPPs include efficiency gains; output focus; economies generated from integrating the design, building, financing and operation of assets; innovative use of assets; managerial expertise; and better project identification. These benefits can result in some combination of better and more services for the same price, and savings, which can be used for other services or for more investment elsewhere. Strategically, partnership contracts enhance accountability by clarifying responsibilities and focusing on the key deliverables of a service. A department's managerial efficiency can benefit significantly as existing departmental financial, human and management resources can be refocused on strategic functions.

2.1 Public – Private Partnership and Hospital Service Delivery Inputs

2.1.1 Total Funding to PNFP Sub sector in Uganda

Total funding to the PNFP sub sector amounted to just 0.5 percent of the total health sector budget in 1997/98, and this had grown to 7 percent by the year 2002/03 (Ssengoba et al, 2007). This funding made a considerable contribution to the financial sustainability of the PNFP health units. For example, in the year 2001/02, government funding from the PNFP conditional grant constituted nearly 30 percent of the budgetary requirements of the PNFP health units (Bataringaya & Lochoro, 2002).

Growing financial support from government grants and improvements in management efficiency have enabled many of the PNFP facilities to adjust their user fees down ward. At least 81 percent of the PNFP hospitals and a number of lower level units have been able to lower fees, leading to increases in utilization, especially for child in-patient stays and general out- patient consultations (Odaga & Maniple, 2003).

According to Green (1999), a financing system may have negative influences on the way health services are provided. Litvack & Bodart (1993) in Cameroon and Gertler & Molyneaux (1997) in Indonesia found that price increases without compensatory improvements in quality discourage utilization of health services for the poor.

2.1.2 Human Resource in PNFP Sub sector

In Uganda, from 1972 to 1996, the number of doctors dropped from 1171 to 964; with a population ratio more than doubling from 1:9090 up to 1: 20228; though the number of nurses increased slightly from 3877 to 4059, the population ratio again rose from 1: 2745 to 1: 4804. Similarly for mid-wives and medical assistants the population ratio rose from 1: 3917 to 1: 7431 and 1: 24457 to 1: 29367 respectively (Mwesigye et al, 2000)

The total volume of health workers coordinated by the three medical bureaus (UCMB, UPMB and UMMB) was 11,114 as by June 30th 2007. This is up by 10% from the 10,000 as of November 2004. It is a very minimal rise in about three years and still much lower compared to 28% rise in the Public sector. About 4% of the PNFP staff in Uganda is civil servants, either deployed by the districts or posted by the Ministry of Health. Whereas there has been an increase in the number of staff and in the percentage of qualified staff employed in PNFP health facilities over along period, the size of the workforce has been stagnating.

2.1.3 Medicines

Access to affordable medicines is included amongst the health-related Millennium Development Goals. Medicines are a major health expense for poor households in most developing countries where 50-90 percent of medicines are paid for by the patients themselves, while in many

developed countries, 70 percent of medicines are publicly funded through reimbursement plans and other mechanisms (Quick et al, 2002). Moreover it is estimated that less than half of the population in the poorer parts of Africa and Asia have regular access to essential medicines. This remains a major obstacle to good health despite the many achievements in the field of essential medicines since the Declaration of Alma Ata in 1978 (Quick, 2003). Social and cultural constraints disproportionately prevent women, children, ethnic minorities, and other marginalized populations from gaining access to medicines (Ruxin et al, 2005).

Improved public expenditure on or/and medicines supply are expected to translate into higher utilization of health services overall (Nazerali H & Oteba M.O. 2005).

2.1.4 Credit line for medicines grant from National Medical Stores (NMS)

The National Medical Stores (NMS) is a semi-autonomous medical supply agency serving the Public Sector in Uganda. Similarly, faith based organizations running the many PNFP health facilities can benefit from economies of scale through the Joint Medical Stores (Kawasaki, 2001). It should be noted that government spending buys far more medicine per unit of expenditure than households spending, as government can benefit from bulk purchasing efficiencies using the National Medical Stores(NMS)(Gabra and Green ,2000; Euro Health, 2004).

2.2 Public – Private Partnership and Hospital Service Delivery Outputs

Reich (2002) argues that partnerships result into innovative strategies and positive consequences for well-defined public health goals, and they can create powerful mechanisms for addressing difficult problems by leveraging the ideas, resources, and expertise of different partners. Such

line of thinking is the same enshrined in the objective of PPPH in Uganda which is “ to establish functional integration and to sustain the operation of pluralistic health care delivery system by optimizing the equitable use of available resources and investing in comparative advantage of the partners” (MOH, 2006).

In Sub-Saharan Africa, for example, the number of people receiving HIV/AIDS treatment increased more than eight-fold from about 100,000 to 810,000 between 2003 and 2005 and more than doubled in 2005. This massive improvement would not have been possible without key public-private partnerships in the HIV/AIDS sector (UNAIDS, 2006). Other studies have reported increased access and reversal of the decline in utilization of health services immediately after the introduction of government subsidies to PNFP sub sector. There was an upward trend in utilisation of composite units of output (SUO) and this rise in utilisation has continued at an even steeper pace into the present day. This is attributed to the effect of the government subsidy in replacing user fees and allowing the charges to be gradually pushed downwards (Giutsi et al, 2004).

Singapore appears to be getting good value from its adoption of the public private partnership for health in its health care system. Patients enjoy complete freedom of choice between easily accessible private (80%) and public (20%) clinics for outpatient care, and public (80%) and private (20%) hospitals for inpatient care. Singapore doctors enjoy a high reputation, as attested by the steady streams of well-heeled foreign patients (150,000 in 2000) who fly in from the surrounding region for medical treatment. Average length of stay in a public hospital is 5 days. A

recent nation-wide survey of patients discharged from all the corporatized public hospitals revealed a high overall patient satisfaction (Meng Kim Lee, 2003).

2.2.1 Hospital Outputs

2.2.1.1 Immunisation

Immunisation is a method of primary prevention aimed at preventing communicable diseases in order to reduce on morbidity and mortality due to the diseases being targeted. In Uganda, six childhood immunisable diseases are tuberculosis (T.B), Diphtheria, Whooping cough (Pertusis), Tetanus, poliomyelitis (polio), and measles. Immunisation is one of the government priorities and is well spelt as an approach for primary health care (PHC). It is one of the most important means of mortality and morbidity in children (Jelliffe, 1979), the others being good nutrition and good environmental sanitation.

Each and every year, infants should be fully immunized. The immunization coverage rates are greatly influenced by the socio-economic status of the mothers. An increase in socio-economic status of mothers results in an increase in immunization coverage rates, the level of participation in immunization activities and the number of fully immunized infants while a decrease results in lowered rates(UBOS, 2007). During the period of 1962 to 1970, Uganda established a comprehensive immunization programme, in which a high degree of vaccination coverage of infants and young children was achieved especially for TB and Polio. By 1973 coverage of TB and Polio was a bout 70 % for children less than 14 year.

A number of factors do affect immunization service delivery to populations. Some are related to the populations themselves while others are related to the health services (Kasule, 1992). In a study conducted by Kasule (1992), it was reported that knowledge, attitudes and practices of a community affected coverage rates and that these were linked up with mismanagement. Other factors influencing immunization included: education, status of parents, husbands consent, and general health education to the community. In one study done in Hoima by Baguma (1988), it was found that despite the mothers having good knowledge of immunization centres, the immunization coverage was low (18.2 %).

2.2.1.2 Antenatal Care (ANC) attendance

Most women in Sub-Saharan Africa initiate ANC late in pregnancy thereby fail to reach the recommended 4 visits. Unplanned/mistimed pregnancy is one of the contributing factors to delayed ANC attendance. Makaweri (2000) on frequency and timing of ANC in Kenya found out that the first visit occurs in the fifth month of pregnancy on average.

Nyane L (2007) conducted a study on factors associated with Antenatal care drop out among pregnant women in Tororo District in Uganda and found out that the level of education, age, parity (number of children previously had), distance and transport, socio-economic status, clients perception on ANC services, knowledge about ANC, Occupation, decision making, marital status, gender dimensions, timing for ANC and unplanned/mistimed pregnancy among others are responsible for Antenatal Care drop out. A study done in Mberere District in Kenya found out that mothers living less than 5 km from the health facility utilized ANC services better than the mothers who were 5 km from the health facility (Mwaniki & Mbugua, 2002).

2.2.1.3 Deliveries

Munaaba E. (1995) found out that the distance to a health unit was a major factor in determining whether professional care for delivery was sought or not. The difference in attendance of mothers from within a radius of 3 km from a health unit, as compared to utilization of health units by mothers who came from a distance of greater than 3 Km was found to be highly significant. This finding suggested that the catchment area of a health unit for purposes of maternity care, should be revised to 3 Km.

Other factors which influence mothers' choice of location of child – birth in Uganda include ethnocentricity, position adopted at child birth, staffing at health units, health facility equipment. Availability of service is a major factor contributing to choice of location of birth. And the WHO chronicle sums it up thus; “As long as they are not sufficient conventional health personnel for total population coverage, as long as funds for health care remain mal-distributed and inadequate, so long will these TBAs continue to be in demand” (WHO Chronicle 36 (3) 1982).

Many modern facilities charge a fee (user fee) which fees are in monetary terms and on a cash delivery ‘basis’. The expectant mother may opt for the traditional sector where payment in real terms may be less, mode of payment flexible (that is, cash or kind), and allowing for credit facilities. In Kenya it was estimated that 75 % of all births in areas where the research was conducted occur under the supervision of Traditional Birth Attendants (Nyamawe, 1984)

A survey on utilization of Home and hospital deliveries in Botswana revealed that 77.1% of urban women chose to deliver from hospital or clinic and only 45.2% of the rural women chose hospital or clinic. The proportion of home deliveries was highest in the most remote villages (low availability of modern service) and lowest in low-cost sites in the urban area (Anderson, 1986).

2.2.1.4 Inpatients

Access and use of hospital in-patient care services can be influenced by several factors. In developing countries, Uganda inclusive, two main aspects of quality that have been documented to influence service utilization significantly are availability of skilled personnel and essential drugs (Hutchinson, 1999; Barnum and Kutzin, 1993). In the government hospital more patients were likely to be admitted due to the ‘free services’ rendered. However, due to higher tendency of stock outs of drugs and poor quality services, patients are either discharged earlier or seek for referral or may outright leave the government hospital, implying low costs of provision of inpatient care. On the other hand, the PNFP hospital which charges a fee for service may have fewer admissions, more IPDs and longer stays mainly due to good quality services. This may contribute to the high costs of provision of inpatient care and higher unit costs and hence an impression of poor efficiency (Ongom M, 2006).

2.3 Measuring Efficiency

The discussion on the definition and measurement of the output of health care organizations has been dominated by two schools of thought namely; process approach and outcomes approach. The process approach, asserts that the output of a health care organization consists of services

provided by the different units such as the X-rays, laboratory procedures, patient days etc; and the outcomes approach, regards the above processes only as intermediate steps leading to the desired change in patient's health status. According to this approach, therefore, output should be measured in terms of the end result or outcome that is improved health (Mersha, 1989).

Output can be seen from the providers' technical standards and patients' expectation (Brown et al, 2003). UCMB (2005) noted that efficiency in health care stimulate people to seek treatment and reduce negative attitudes which increase access and utilization of services. Mills (1990) mentioned that working in an environment where employees are aware that treatment quality is poor is not motivating staff because it affects their morale. Lack of focus on quality results in waste of resources. Focus on delivering quality of services provides opportunities to utilize resources efficiently.

The outcomes approach is highly limited by practical difficulties. First, it is easier to measure and define processes in health care than changes in health status. Second, changes in health outcome can not be entirely attributed to health care. Health is multi-dimensional and affected significantly by a host of other socio-economic factors. Consequently, output is measured as an array of intermediate outputs (health services) that supposedly improve health status (Melbourne, 2004).

2.3.1 Standard Unit of Output

A composite Indicator of activity (Standard Unit of Output for hospitals-SUO (h) was calculated by attributing to each output a relative weight. The weight attributed to each parameter was worked out on the basis of costs drawn from the literature a, b, c

a) Barnum H. and Kutzin J. (1993) in the grey literature examined 1Ip day would equal to 4Op. Given that in the PNFP Hospitals studied the Average Length of Stay (ALOS) is 6.9 days, 1Ip would be equal to 24 to 28Op.

b) Flessa S. (1997); the first report of the study conducted by Flessa in the Lutheran Hospitals in Tanzania, found that 1Ip day equals to 2Op. Therefore according to Flessa 1Ip would equal to 12-14Op.

c) Giusti D. (1993); the author conducted a cost analysis in Matany Hospital: in terms of cost 1Ip would equal to 15Op. Eventually this latter weight was adopted because it was closer to the finding of Flessa. The weight proposed by Barnum was drawn from cost analysis in Hospitals from higher income countries. In addition a relative weight was attributed also to Deliveries = 5Op, immunizations=0.2Op and ANC activities= 0.5Op. The formula for the calculation of SUO (h) would result: $1 \text{ SUO (h)} = [15 * \text{Ip} + 1 * \text{Op} + 5 * \text{Del} + 0.2 \text{Imm} + 0.5 * \text{ANC}]$.

The SUO is used as a proxy for measurement of the volume of activity of a hospital and adds up 5 main outputs as if they were all outpatients based on their relative cost to the outpatient.

2.3.2 Trends of Standard Unit of Output in PNFP Hospitals in Uganda

MOH (2007) revealed that for the three years running (2004/05, 2005/06 and 2006/07), there was a trend analysis of access and efficiency parameters of a set of 65 PNFP hospitals in Uganda.

The components of the SUO revealed the following; the outpatient attendance has decreased by 2% from 2005/06; the inpatient attendance has decreased by 10 % from 2005/06; Utilisation of antenatal services has increased by 14 %, immunization increased by 2%; and the overall volume of outputs measured by SUO has decreased by 5%. UCMB-UPMB-UMMB (2007) documented that both PNFP hospitals and lower level facilities have steadily registered increases in Standard Unit of Output (SUO) –a proxy for access-which is a composite index of IP, OPD attendance, ANC, Immunisation and deliveries. They mention that the slight drop in 2005/06 is undoubtedly a consequence of the reduced support from government.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the methods used to carry out the study. It outlines the study design, study setting, sampling procedure, measurements, data collection, data management and analysis as well as quality control measures and ethical considerations.

3.1 Study Design

This was a time series study design. The study involved analysis of data generated from Kagando hospital records over an eleven year period (1996/7 – 2006/7), during which time hospital embraced the Public Private Partnership for Health.

3.2 Study Setting

The study was conducted at Kagando Hospital, which is located in Bukonzo County, about 40 kilometers a way from Kasese town to the west. Kagando hospital is a Private-Not-For-Profit hospital founded by Church of Uganda. It has a catchment population of 148,195 (Kagando Hospital HMIS, 2007). The hospital was established by the African Inland Mission in 1965 primarily as a treatment centre for leprosy. By 2007, the hospital had attained a 234 bed capacity. It consists of eighth (8) wards, which include namely; maternity, surgical, paediatric, medical male and female wards as well as the leprosy and tuberculosis treatment unit. Over the years, the hospital activities diversified in response to the community needs and currently it acts as a referral centre for both emergency and elective medical and surgical conditions in Kasese

district. Besides, Kagando hospital runs a school of nursing and midwifery that offers certificate and diploma courses to an average of about 20 candidates per year.

3.3 Data Types and Sources

3.3.1 Inputs data

Table 1: Sources of Hospital inputs

Objective	Type of input data	Definition	Measurement	Source of data
Assess the extent to which the financial and human resources support through Public – Private Partnership affect Kagando hospital's delivery of healthcare service.	Financial resources	Government , donor agencies, user fees, sales and other income	Amount in Uganda shillings per year	KARUDEC: Diocese of South Rwenzori C.O.U; Audited Financial Statements 1996/7-2006/7
	Human resources for health	Medical doctors, nurses and other employees	Total staff employed per year, government seconded medical staff per year, ratios	Kagando Hospital Human Resource Files 2002/3-2006/7; Establishment Register for seconded staff 2004-2007
	Hospital beds	Inpatient beds in all wards	Total number of hospital beds per year	Kagando Hospital Assets Register

Financial and human resource data was to ascertain whether the support received under PPPH was adequate to propel the hospital to horizons of efficiency in health delivery. The number and categories of seconded staff by government to Kagando hospital was established in order to measure the extent of support. Appointments were made with hospital administration department to gain access to the human resources, financial support and other relevant input data for the period 1996/7 to 2006/7.

3.3.2 Outputs data

Data on key outputs of the study was got from the following documents/sources:

Table 2: Sources of Hospital outputs data

Objective	Type of output data	Definition	Measurement	Source of data
Determine the Standard Unit of Output (SUO) for Kagando hospital and its relationship to human resource, cost of medicines, total costs and user fees.	Admissions	Annual total admissions	Number of inpatients per year	Inpatient registers in all medical and surgical wards, leprosy/TB Unit (inpatient Annual statistics)
	OPD attendance	Total OPD attendances (both first and re-attendances)	Number of OPD attendances per year	OPD registers, HMIS(Outpatient Annual statistics)
	Deliveries	Annual total deliveries	Number of OPD deliveries (cesarean section and normal) per year	Theatre operation register, HMIS forms
	Immunisation	Annual total immunized	Number of children 0-5 years immunized per year	Immunization records/registers, HMIS forms
	Antenatal care (ANC) attendances	Annual total ANC attendances	Number of mothers attending ANC per year	ANC registers
	Surgical operations	Annual total surgical operations	Number of surgical operations (both major and minor) per year	Surgical ward registers, Theatre operation registers

3.4 Sample Selection

Kagando hospital was purposively selected because of its long-standing history of participation in the public-private partnership in health since 1996/7. The hospital is presumed to have demonstrated efficiency, sound management and acceptable quality standards. Details of the operational units of the hospital were selected based on the type of services for which the support through PPP had been earmarked.

3.4.1 Selection of Hospital Units

The Hospital units sampled for inclusion in this study included all in-patient wards; surgical, medical, maternity and paediatric wards. These helped in determining the yearly total number of

inpatients with medical conditions. The Operating theatre and maternity ward were used to determine the number of deliveries by caesarian section and normal deliveries. The Out-patient department (OPD) to determine the yearly total number of cases treated on an out patient basis. The above units were selected based on the SUO model for outputs and thus relevant to research objective one. The outputs data was used to measure the Standard Unit of Output as a proxy measure for access to health services in terms of total admissions, total OPD attendances, total deliveries, immunization and Ante-natal care services utilization and thus relevant to research objective two.

3.5 Data Collection

A checklist was administered to the hospital administration and finance department staff to extract information from the hospital records. Human resource checklist was used to capture staff categories namely: the total number of medical doctors, nurses and other employees per year for the period under study. A checklist on number of hospital beds and cost of drugs per year were also used to capture input data. The sources of revenue or funding for Kagando hospital were categorized to include government contribution, user fees, donor agencies, sales and other income. Information on health services provided by the hospital was collected based on variables used in the measurement of the standard unit of output. Specifically, the checklist captured data on yearly total number of admissions, OPD attendance (both new and re-attendances), total number of immunizations done, total deliveries and overall ANC attendance over the period 1996/7 to 2006/7.

3.6 Measurements and Key Concepts

Labour categories were combined into three variables: doctors, nurses and other employees to minimize some variation in how the hospital records their staff in the registers. The variable ‘doctors’ included all senior medical officers, medical officers as well as dental surgeons. The variable ‘nurses’ included senior nursing officers, nursing officers, Uganda registered nurses, midwives, enrolled midwives, enrolled nurses, nursing assistants, and nursing aides. And the variable ‘other staff’ included clinical officers, dispensers, anesthetics officers, radiographers, orthopedic officers, laboratory technologists and technicians, laboratory assistants, hospital administrator, accountant, clerical officers, supplies officers, stores assistants, telephone operators, dark room attendants, mortuary attendants, drivers, security guards, carpenters, electrical technicians and plumbers. All staff included in this study were salaried. The number of hospital beds was used as a proxy indicator for capital stock because a reliable measure of the value of assets is rarely available.

3.7 Data Management and Analysis

A study database was created. Data were entered into the computer using MS Excel version and cleaned. Analysis was performed using MS Excel software. Categorical variables were summarized using frequencies and proportions. Continuous variables were summarized using medians, means, minimum and maximum values. Univariate analysis was performed to describe the trends in the data while at bivariate level correlations were used to determine relationships between two continuous variables. This was used to describe the SUO and its relationship with other efficiency indicators and correlations. Results were presented by use of tables and charts.

Objective one; extent to which financial and human resource support through PPP affected Kagando hospital's service delivery outputs was measured by documenting trends in immunization, OPD utilisation, ANC attendance, Deliveries, Admissions and surgical operations as these constitute key elements of the Uganda minimum health care package. Data on hospital inputs was extracted from the final accounts, national disbursements and human resources files of Kagando hospital.

In answering objective two to determine the Standard Unit of Output (SUO) to measure hospital efficiency; SUO was calculated using the Giusti (2002) formula:

Standard Unit of Output = (15* Total Admissions) + (1* Total OPD Attendances) + (5* Total Deliveries) + (0.2* Total Immunizations) + (0.5* Total ANC attendances).

This simply equates the cost of treating 1 inpatient to the one for 15 outpatients, 1 delivery to 5 outpatients, 0.2 immunisations to 1 outpatient and 0.5 antenatal care visits to 1 outpatient. Therefore, a Standard Unit of Output (SUO) also referred to as 'outpatient equivalent' was used after converting the various hospital outputs-inpatients, deliveries, antenatal care contacts, and immunizations, into outpatient equivalents.

Total yearly utilization figures for admissions, OPD attendance, deliveries, immunization and ANC attendance for the period 1996/7 to 2006/7 were computed and factored into the SUO equation and thus relevant to objective two. A composite indicator of activity (SUO) was calculated by attributing to each output a relative weight. The weights attributed to each output were derived based on the costs drawn from the formula provided by Giusti (2002).

Further analysis of efficiency related indicators to SUO to answer objective two was done. The SUO, SUO per staff, Average fees per SUO, Unit cost of standard unit of output and Cost of drugs per SUO were used as proxy for access to health services. The SUO per staff was calculated by dividing the SUO for a particular year with total number of health workers from that year. User fee per SUO was calculated by dividing total user fee generated for a particular year with the SUO from that year. The unit cost of the SUO was calculated by dividing the total hospital expenditure for a particular financial year by the SUO from that year. Cost of drugs per SUO was calculated by dividing the total expenditure on drugs for a particular financial year by the SUO from that year.

3.8 Quality Control

The data was collected by the Principal Investigator with guidance from the supervisors. The study purpose was explained to the staff from the Finance & Administration department of Kagando hospital. The tools for data collection were pre-tested at St Paul Health Centre IV in Kasese town to determine their relevancy and validity and adjustments made accordingly. Data collected was kept under lock and key.

3.9 Ethic Consideration

The Faculty of Economics and Management of Makerere University approved the study. Permission to conduct the study was obtained from the Chief Administrative Officer and the District Health Officer, Kasese. The purpose of the study was explained to the respondents and requests to access the hospital records granted by the Hospital administration. All data collected was treated with strict confidentiality and kept under lock and key.

CHAPTER FOUR

RESULTS

4.0 Profile of the Study

Between April and August 2008, data on hospital records to ascertain the level of government financial and human resource support and the efficiency on health service delivery at Kagando hospital through PPP were reviewed for the period 1996/97 to 2006/07. Findings in sections 4.1 and 4.2 are relevant to research objective one while section 4.3 is relevant to research objective two.

4.1 Inputs to Kagando Hospital under the Public Private Partnership

4.1.1 Sources of Funding for Kagando hospital

The sources of funding for Kagando hospital with corresponding financial support based on review of hospital financial records and disbursements from central government for the fiscal years 1996/97 to 2006/07 are summarized in Table 3.

Table 3: Sources of Funding for Kagando Hospital FY 1996/97 – 2006/07

Source of funding	Amount in Ugshs	Percent (%)
Government contributions	2,163,774,934	18.42
User fees	5,591,330,621	47.61
Donor agencies	3,140,425,700	26.74
Sales	236,554,387	2.01
Other income	612,560,788	5.22
Total	11,744,646,436	100.0

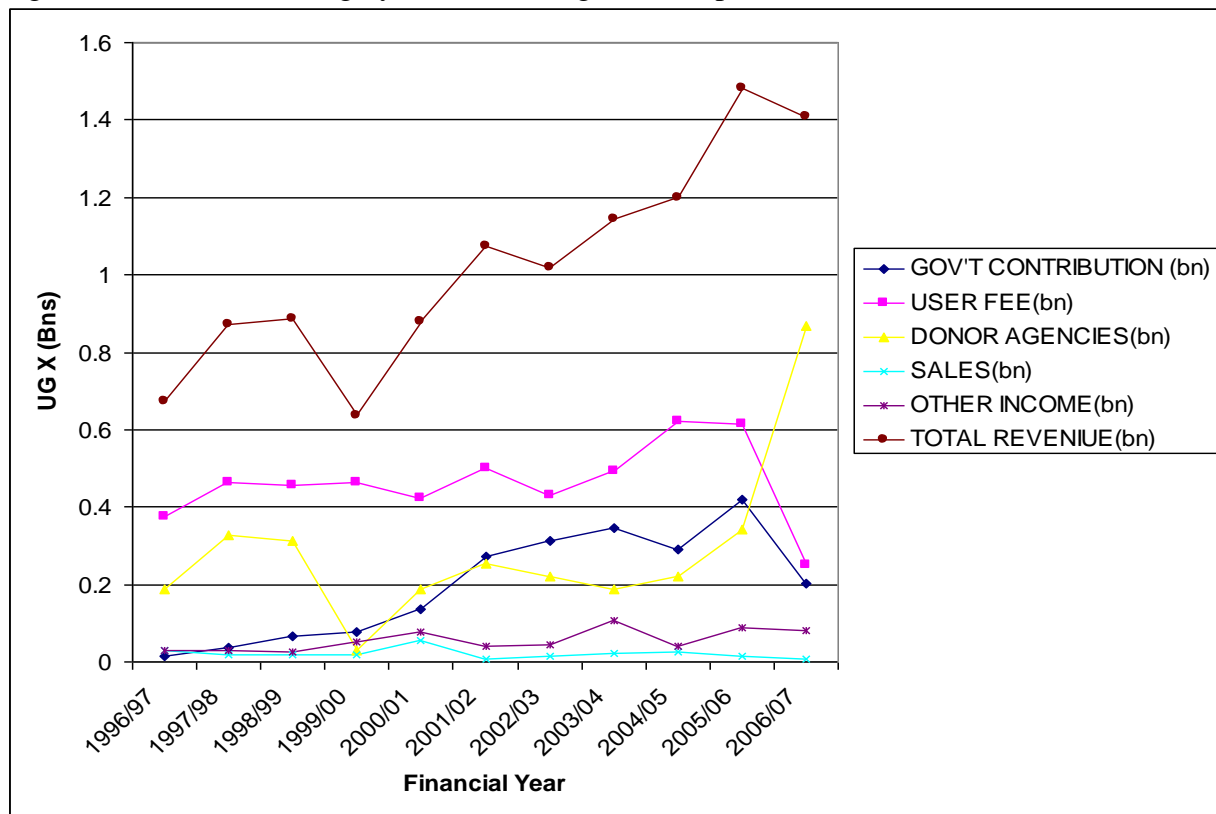
Source: KARUDEC: South Rwenzori Diocese: Audited financial statements 1996/97-2006/07

Findings from Table 3 reveals that the hospital received 2,163,774,934 Uganda shillings from government as contribution under the public private partnership scheme.

4.1.2 Trends in funding

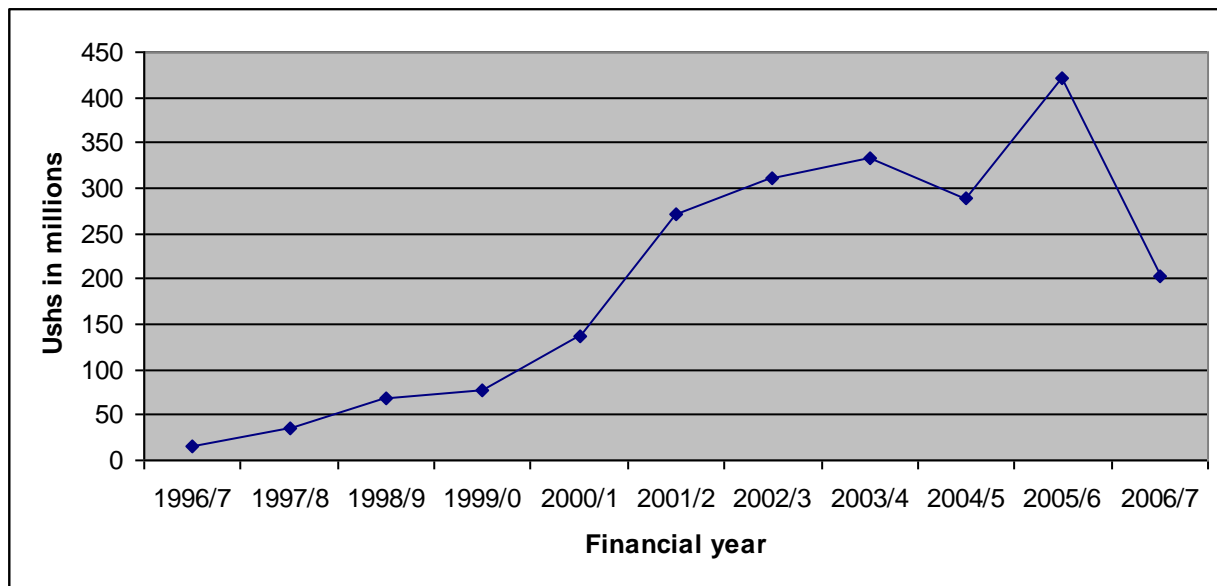
In this study, we documented trends in funding by source over an eleven fiscal year period from 1996/97 to 2006/07. Findings are summarized in Figure 1.

Figure 1: Trends in funding by source for Kagando Hospital 1996/97-2006/07 in billions (bn)



Findings from Figure 1 revealed an increase in government contribution as well as increase in other sources of funding from the financial Year 1999/2000 up to 2005/06. However, from 2004/5 to 2006/7, a decline in funding from many sources while donor funding increased is observed. Further analysis of government financial support through the PPP scheme was done separately to appreciate the trends over the 11-year period. Figure 2 shows the details.

Figure 2: Trends in government financial support to Kagando hospital under PPP



Findings from Figure 2 reveal a general increase in government financial support to the hospital.

However, a decline in government funding was noted in the FY 2004/05 and 2006/7.

4.1.3 Support to Primary Health Care (PHC)

Further analysis of financial support to primary health care under PPPH to Kagando hospital exhibited an increasing trend from FY 1997/98 to 2003/04 from Ugshs 7.17 million to 62.5 million and then declined over the period 2004/05 to 2006/07 as shown in figure 3.

Figure 3: PHC support to Kagando Hospital, FY 1996/7 to 2006/7

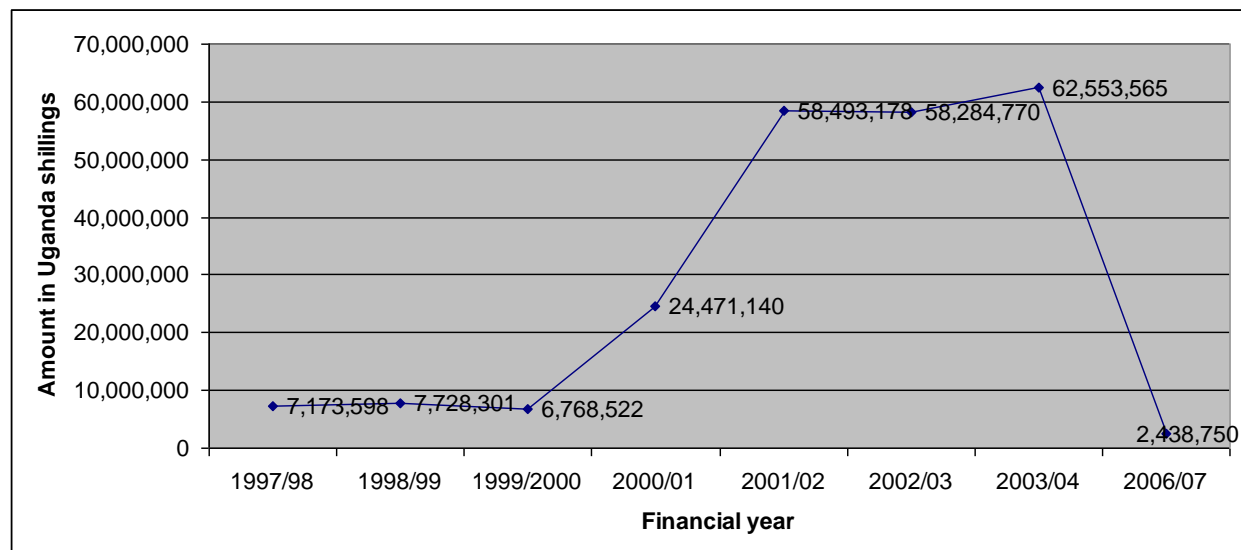


Figure 3 shows that there was an overall increase in PHC funding to Kagando Hospital over the period FY 1997/8 to 2003/4 and a decline in support in 2006/7. It is important to note that data on PHC funding for 1996/7, 2004/5 and 2005/6 was missing.

4.1.4 Support to HIV/AIDS activities

The Joint Clinical Research Centre (JCRC) mobilized funds from development partners on behalf of government and disbursed the funds to Kagando hospital for HIV/AIDS prevention shown in Table 4.

Table 4: Financial support (in 000) by Joint Clinical Research Centre to Kagando hospital between FY1998/9 and 2006/7

FY	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7
Ugshs (000)	12,000	7,800	3,600	90,000	90,000	110,672	110,672	10,000	54,840

The pattern of financial support to HIV/AIDS in Table 4.2 shows that there was an overall increase in financial support to HIV/AIDS activities over the period 1998/9 to 2004/5. The HIV/AIDS support reveals a sharp declining trend in FY 2005/6

4.1.5 Support to Human Resources for health

Under public private partnership, government supported human resource development at Kagando Hospital through the wage sub-vention fund to staff who are seconded by government. Findings for the entire staff of Kagando hospital for the FY 2002/3 to 2006/7 are summarized in Table 5.

Table 5: Staffing at Kagando hospital between FY 2002/3 and 2006/7

Year	Doctors	Nurses	Other employees	Total number
2002/03	6	101	92	199
2003/04	11	104	84	199
2004/05	6	77	60	143
2005/06	9	84	79	172
2006/07	9	109	77	195

Overall, Kagando Hospital employed on average 188 staff in a given year, ranging from 143 in 2004/05 to 195 in 2006/07. The staff included ‘Doctors’ who ranged from Specialist Medical Officers, Medical Officers, Pharmacists and Dentists to Residents and Interns. “Nurses” included Nurses/Midwives of different professional categories ranging from professional enrolled, registered, community nurses/midwives, to nursing assistants. Other employees included paramedics and assistants technicians, administrative staff and other general staff. It is important to note that the majority of the staff were nurses compared to doctors and other employees. The

maximum staff level of 199 staff was achieved in FY 2002/3 and 2003/4 while the lowest staffing of 143 was registered in 2004/5.

Further analysis of the staffing was done to determine what proportion of the total staff were employed by government. Table 6 shows the staff who were seconded by government to Kagando hospital under the PPP strategy.

Table 6: Staff Seconded by Government to Kagando hospital, FY 2002/3 – 2006/7

Category	Doctors	Nurses	Other employees	Total number
FY	(n,%)	(n, %)	(n,%)	(n,%)
2002/03	4(66%)	10 (10%)	5 (5%)	19 (10%)
2003/04	2 (18%)	10(10%)	5 (6%)	17 (9%)
2004/05	2 (33%)	14(18%)	4 (7%)	20 (14%)
2005/06	5 (56%)	14 (17%)	4 (5%)	23 (13%)
2006/07	4 (44%)	14 (13%)	7 (10%)	25 (13%)

Source: Kagando hospital; Human Resource file, 2002/03-2006/07

Table 6 revealed that 9% to 14% of Kagando Hospital staff was seconded by government, the majority of whom were doctors followed by nurses and other employees. However, data on Human Resource between 1996/97 to 2001/02 was not available. At any given year, the total number of staff seconded to Kagando varied between 17 and 25.

4.1.6 Staff bed ratios

Ideally, an increase in medical staff in a hospital should lead to an increase in staff to bed ratio if the staffing is to have any effect on hospital efficiency. The yearly total staff per bed, doctor per bed and nurse per bed ratios was calculated to assess if the increase in staffing due to government secondment had an influence on staff bed ratios. Table 7 summarises the details.

Table 7: Average ratios for total staff per bed, doctor per bed and nurse per bed ratios

Year	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Total staff per bed	0.88	0.88	0.63	0.73	0.83	0.91
Doctor per bed	0.03	0.05	0.03	0.04	0.04	0.03
Nurse per bed	0.44	0.46	0.34	0.34	0.46	0.5

Table 7 revealed that for the period 2002/03 to 2007/08, the average ratio of total staff per bed for Kagando hospital was 0.81, doctor bed ratio was 0.04, nurse bed ratio 0.42. The ratio for doctor per bed per year was lower than that of nurses per bed for the entire period of study.

4.1.7 Support on medicines through Credit line

The Government also provided medicines for use by the Hospital under the credit line for medicines grant that was managed centrally by the Ministry of Health through the Joint Medical Store (JMS) summarized in table 8.

Table 8: Joint Medical Stores (JMS) credit line for medicines grant to Kagando hospital, FY 2004/05 to 2007/8

FY	2004/05	2005/06	2006/2007	2007/08
Credit line(Gushes)	193,874,563	200,216,373	2004,312,048	235,407,473

Table 8 revealed an overall increasing trend in funding by government to Kagando hospital under the credit line for medicines grant. The value of medicines accessed under this credit line increased from UG X 193,874,563 in FY 2004/2005 to 235,407, 473 in FY 2007/08 as revealed in table 8. However, data on credit line between 1996/97 to 2003/04 was not available.

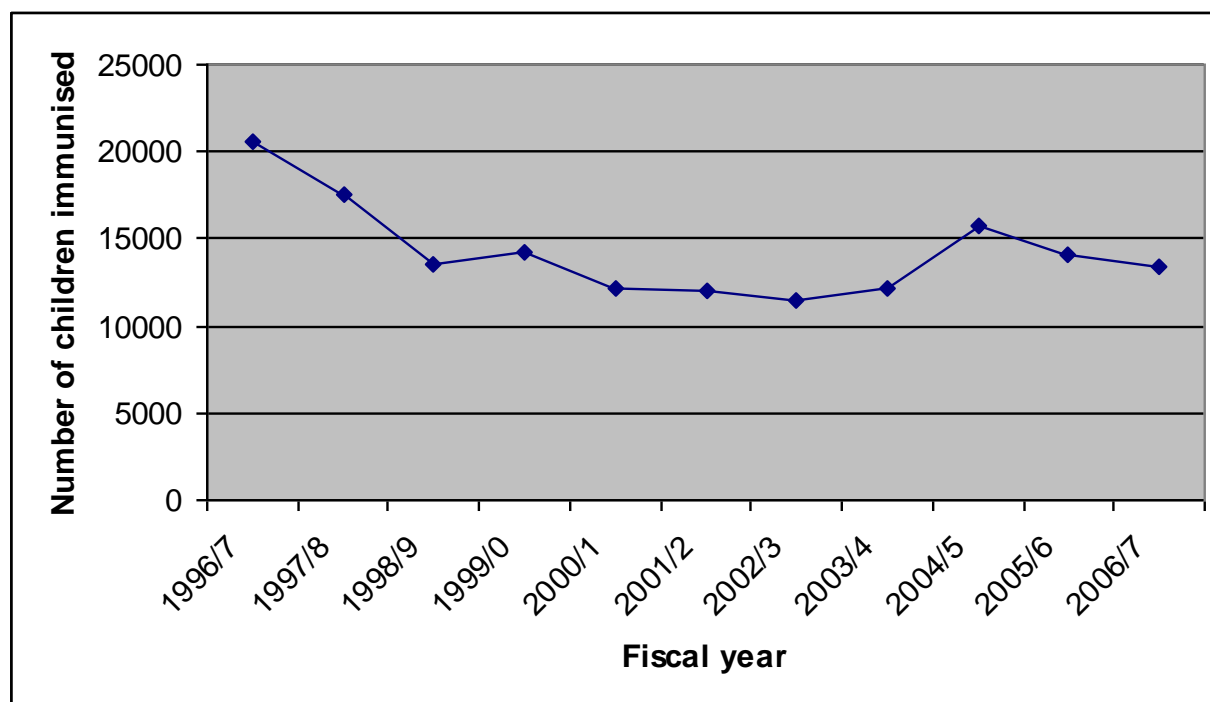
4.2 Hospital Service Delivery Outputs

The study looked at specific outputs at service delivery level to determine the extent to which Kagando hospital utilized the government funding and human resource received over the eleven-year period. This was based on key variables on the SUO and other vital output variables. These included number of children immunized (irrespective of the type of immunization), number of patients seen at OPD (irrespective of old and new cases), mothers who attended ANC (irrespective of new and repeat visits), number of admissions, number of deliveries and surgeries performed (both elective and emergency) during the period under study. Details are presented in the proceeding sections.

4.2.1 Immunization for children 0-5 years

Immunization for children is a proxy for hospital involvement in the provision of PHC activities to the community and thus a key output indicator. In this study, documentation of the trends in immunization of children for the period FY 1996/7 to 2006/7 was done. Details are summarized in Figure 4.

Figure 4: Number of children immunized at Kagando hospital over the period 1996/7 to 2006/7.

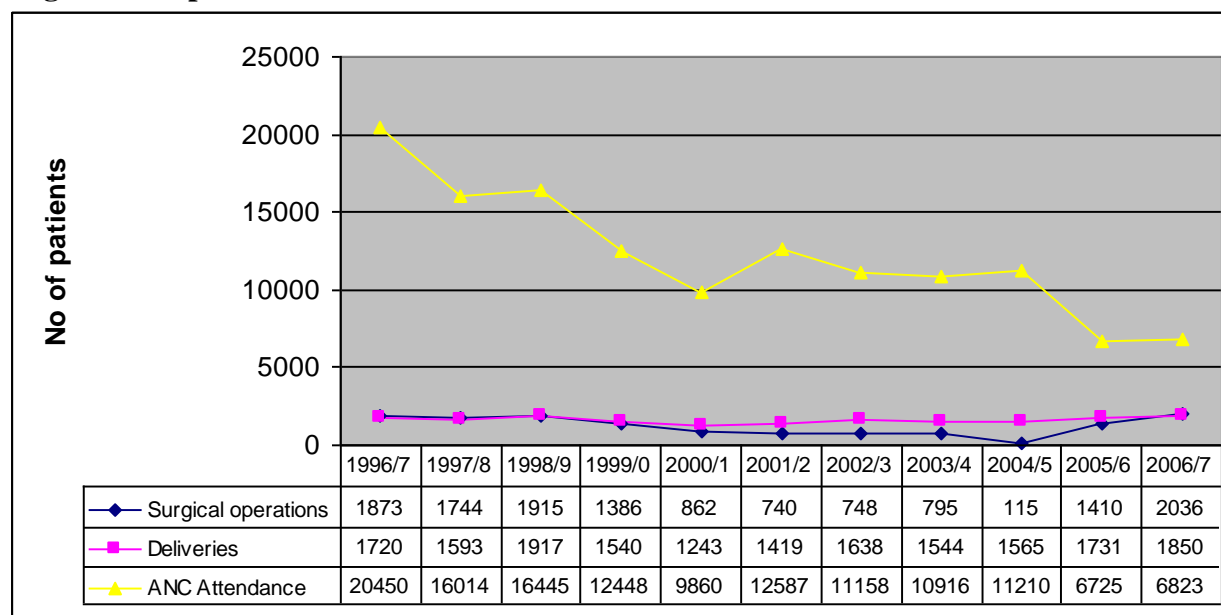


Overall, there was a declining trend for the total number immunized from 20592 immunized children in FY 1996/7 to 11399 immunized children in FY 2002/3, with a slight increase in 2004/5 and then a decline for rest of the period under study most likely due to changing priorities in budget allocations.

4.2.2: Surgical operations, normal deliveries and ANC attendance at Kagando Hospital between FY 1996/7 and 2006/7.

In this study, we assessed the trends in number of surgical operations, normal deliveries and ANC attendance. These are important indicators in hospital service delivery. Results are presented in Figure 5.

Figure 5: Trends of Surgical operations, normal deliveries and ANC attendance at Kagando Hospital between FY 1996/7 and 2006/7.

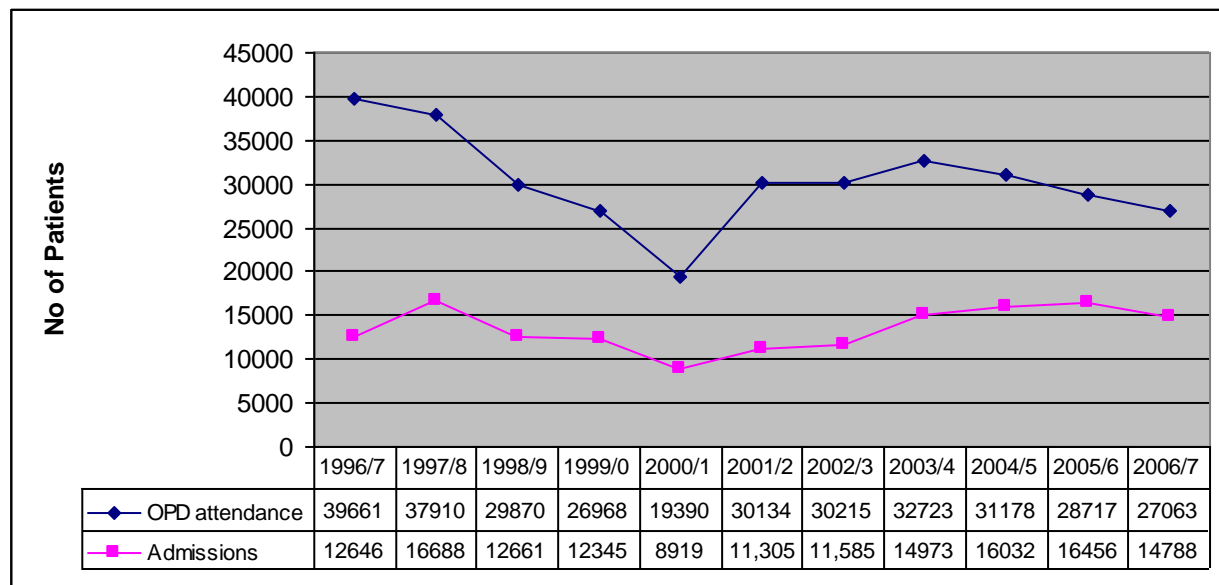


ANC attendances over the period of 11 years showed a declining trend. Mothers can prefer to go for re-attendances of ANC in other health facilities nearest to them not necessarily the health facility of first visit. The total number of deliveries and surgical operations revealed a flattened declining and increasing trend for the entire eleven year period of PPP implementation. Total ANC attendances was highest in FY 1996/7 at 20,450 and continued to decline to 6,823 in the FY 2006/7 while total deliveries per year was highest at 1,917 in FY 1998/9 and lowest at 1,243 in FY 2000/01. Surgical operations were highest at 2,036 in FY 2006/7 and lowest at 740 in FY 2001/2.

4.2.3 OPD attendances and Admissions

Similarly, OPD attendance and hospital Admissions is a sign of increased access and use of PHC services by the population and thus a proxy measure of efficiency. Results are presented in Figure 6.

Figure 6: OPD attendance and Admissions at Kagando Hospital between FY 1996/7 and 2006/7.



The total number of OPD attendances per FY showed an overall declining trend from 39,661 patients in FY 1996/7 to 19,390 patients in FY 2000/1 and then increased up to 32,723 patients in FY 2003/4 when it started declining again to 27,063 patients in FY 2006/7. Admissions revealed a declining trend between 1997/8 and 2000/1 and an overall increasing trend between 2001/2 and 2005/6. The highest number of Admissions was registered in FY 1997/8 at 16,688 inpatients and the lowest in FY 2000/1 at 8,919 inpatients.

4.2.4 Patient to Doctor and Nurse Ratios

The ratios were calculated to determine the extent to which the secondment of staff by the government to Kagando hospital translated into reduction in staff work load. Details of findings are shown in Table 9.

Table 9: Patient to doctor and nurse ratios

Financial year	2002/03	2003/04	2004/05	2005/06	2006/2007
OPD patient: Doctor ratio	5035.83	2974.82	5196.33	3190.78	3007
OPD patient: nurse ratio	299.16	314.64	404.91	341.87	248.28
Inpatient: Doctor ratio	1930.83	1361.18	2672	1828.44	1643.11
Inpatient: Nurse ratio	114.70	143.97	208.21	195.91	135.67

The OPD patient: Doctor ratio showed an overall reducing trend which implies a reduction in doctor work load. The outpatient doctor ratio also reduced in FY 2005/06 and 2006/7 from 3191 to 3007 outpatients revealing reduction in doctor workload. The Inpatient: Doctor ratio revealed an overall declining trend implying a reduction in doctor workload. Inpatient doctor ratio showed an overall declining trend between FY 2002/03 and FY 2003/4 showing a reduction in doctor workload and later started rising in FY 2004/05 and then declined for the rest of the study period

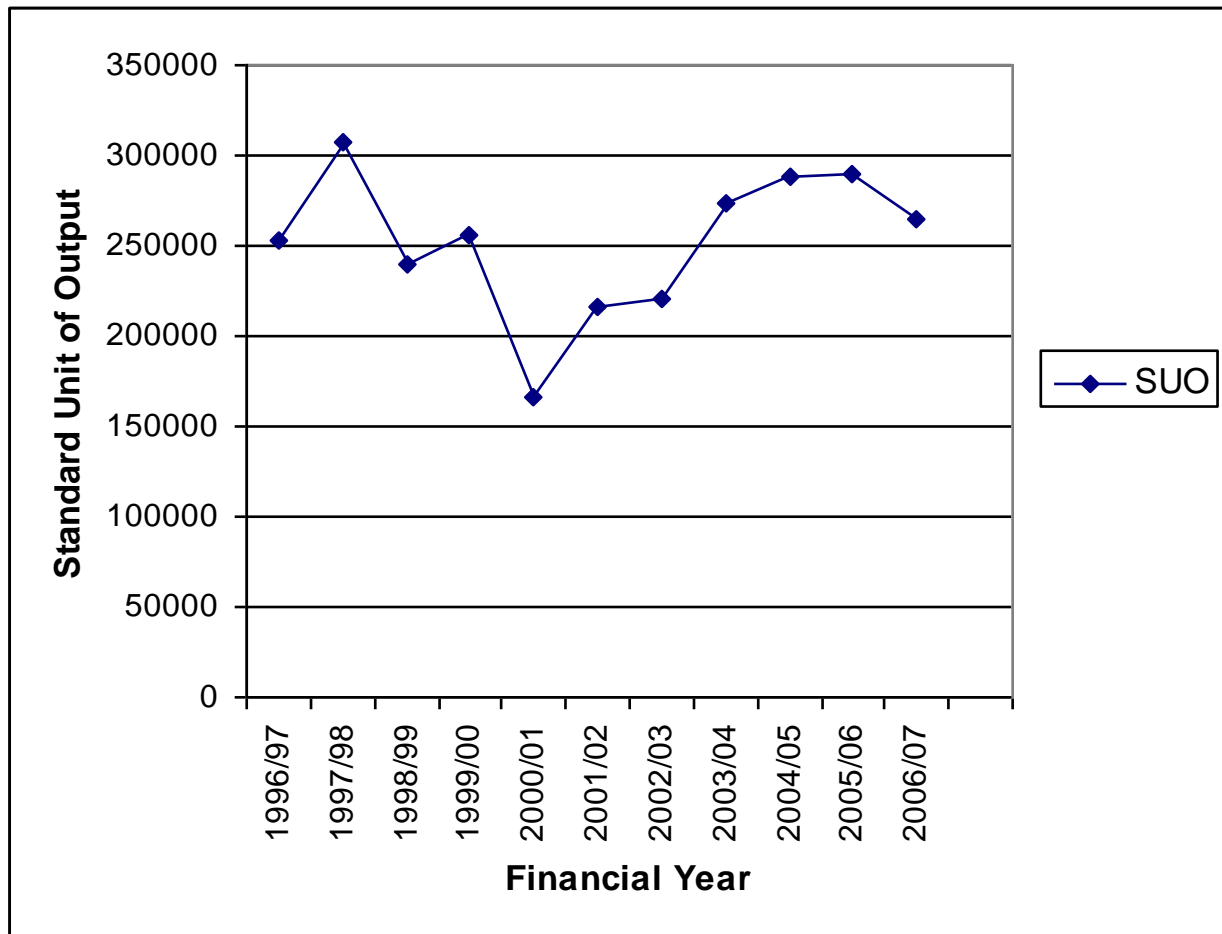
The OPD patient: Nurse ratio revealed an overall increasing trend between FY 2002/03 and 2004/05 and later started declining. The outpatient nurse ratio revealed an increasing trend from 2002/3 to 2004/5 and later declined up to 2006/7. Inpatient: nurse ratio was highest in FY 2004/5 with 208 Inpatients per nurse per year and lowest in FY 2002/3 at 114 Inpatient per nurse per year and later revealed an increasing trend up to FY 2005/6 and a decline in FY 2006/7.

4.3 Standard Unit of Output (SUO)

The SUO is used as a proxy for measurement of the volume of activity of a hospital and adds up 5 main outputs as if they were all outpatients based on their relative cost to the outpatient. This analysis was relevant in achieving objective two. The SUO was calculated using the formula developed by Giusti (2002): $\text{Standard Unit of Out put (SUO)} = (15 \times \text{total admissions}) + (1 \times \text{total OPD attendances}) + (5 \times \text{total deliveries}) + (0.2 \times \text{total immunisation}) + (0.5 \times \text{total ANC attendances})$. Based on this formula, Giusti (2002) concludes that a health facility is said to be efficient if the SUO exhibits an increasing trend while a decreasing trend is said to reveal inefficiency in health service delivery, as a proxy of access.

Figure 7 shows the trend of the total annual SUO for Kagando hospital from 1996/7 to 2006/7. The trend of total annual SUO revealed a declining trend from 1997/8 to 2000/1 and an increasing trend from 2001/2 to 2005/6. The declining trend of SUO was due to decline in hospital service delivery outputs of Immunisation, OPD attendances and ANC attendance. In addition, Government of Uganda budget support cuts to Kagando hospital could have negatively impacted on the overall performance of the SUO.

Figure 7: Standard Unit of Outputs for Kagando Hospital between 1996/97-2006/07

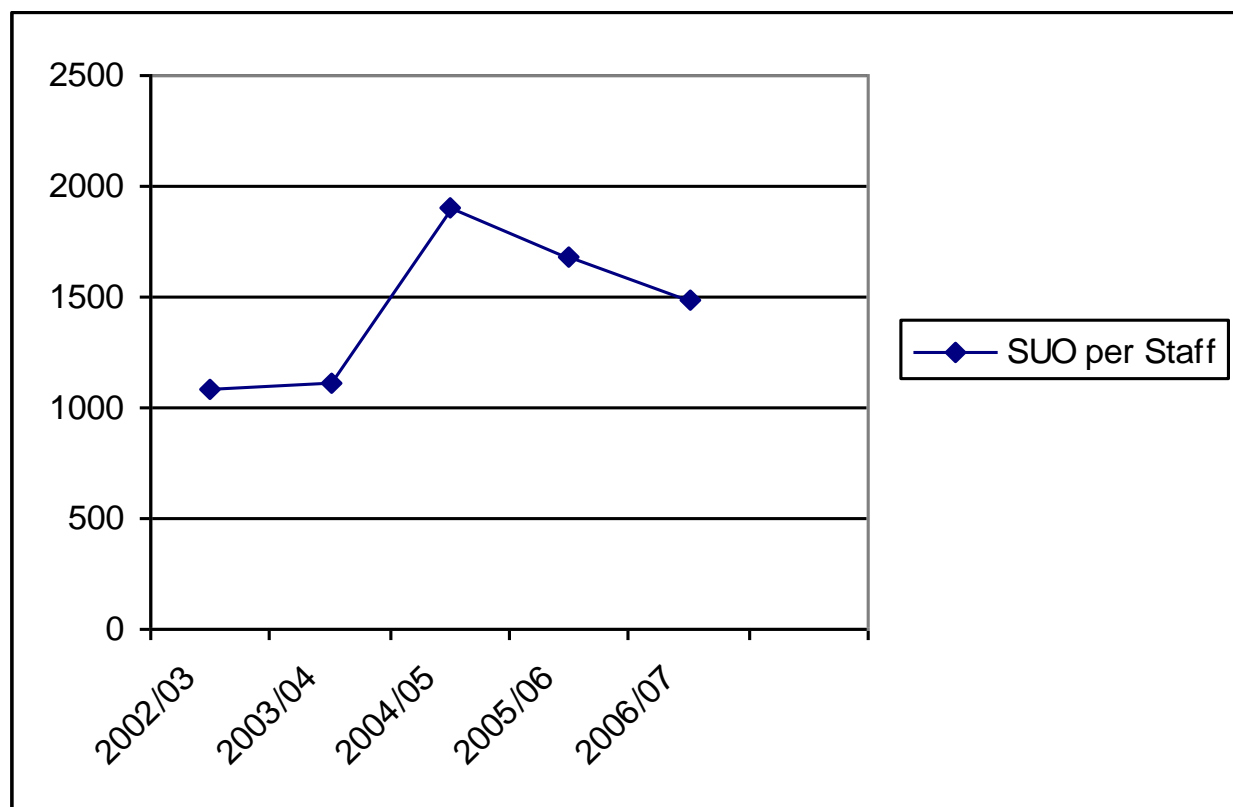


The SUO increased from 252,294 in FY 1996/97 to 307,699 in FY 1997/98 then declined and was at its lowest in 2000/01. It then began to rise peaking at 290,380 in FY 2005/06. The standard unit of output at Kagando hospital was highest at 307,699.8 in FY 1997/98 and lowest at 166,750.2 in FY 2000/2001. The SUO pattern is that of a decline from 1997/98 till FY 2000/01 followed by an increase. The overall trend of the SUO revealed a declining trend between FY 1997/98 and 2000/01 and an increasing trend between FY 2001/02 and 2005/06, and then SUO started declining thereafter. The average SUO for entire period of study was 252,199.

4.3.1: Standard Unit of Output per staff

Standard Unit of Output (SUO) per staff measures staff productivity over time. Gusty (2002) argues that an increase in SUO per staff reveals improved staff productivity while a decline in SUO per staff reveals a reduction in staff productivity. In this study, the SUO per staff for Kagando hospital was determined as a way of measuring efficiency. The overall trend of the SUO per staff is an increasing one as shown in figure 8

Figure 8: SUO per staff for Kagando Hospital 2002/03-2006/07

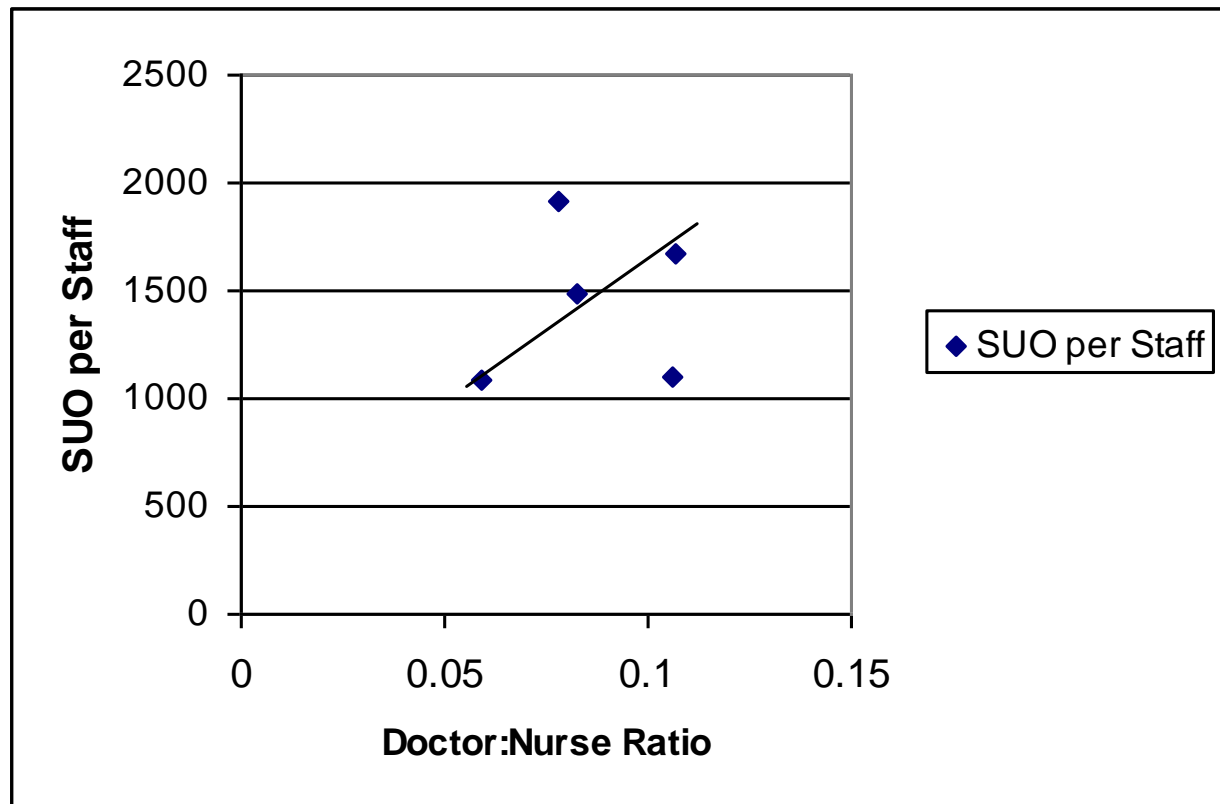


The Standard Unit of Output per staff increased from 1,084.8 in FY 2002/3 to 1,908.6 in FY 2004/5 when the total number of government seconded staff to the hospital increased in the same year and then took on a declining pattern up to 1,489.1 in FY 2006/7 even when the hospital had the highest number of seconded staff from government. The staff, on average, was responsible for 1,389 outputs per year.

4.3.2: Relationship between SUO per staff and Doctor: Nurse ratio

The SUO per staff was plotted against the doctor: nurse ratio to ascertain the relationship between the two variables using a scatter diagram. Findings are presented in Figure 4.9.

Figure 9: Scatter diagram showing relationship between SUO per staff and Doctor: Nurse ratio for Kagando hospital between 2002/3 to 2006/7



The SUO per staff and the doctor: nurse ratio showed an overall upward pattern from 1084.8:0.06 in FY 2002/3 to 1675.8:0.11 as revealed by the scatter diagram. The correlation coefficient between SUO per staff and doctor: nurse ratio of 0.133 was positive which means that there was a positive relationship between SUO per staff and doctor nurse ratio.

4.3.3 Total cost per unit of output (SUO)

Cost per unit of output (SUO) is another efficiency indicator. The total costs considered for Kagando hospital included expenditures on: salaries (local), treatment of staff, training and welfare, canteen and food, drugs and medical supplies, consumable supplies, transport, fees waived, power, donations and bad and doubtful debts. However, other cost centres of the hospital such as nursing training were not included. A health facility reflects efficiency when the cost per standard unit of output declines. As the cost per standard unit of output increases, it is said to be reflecting inefficiency in health service delivery. The findings of cost per unit of output are shown in Table 10.

Table 10: Total Cost per SUO for Kagando hospital FY 1996/97-2006/07

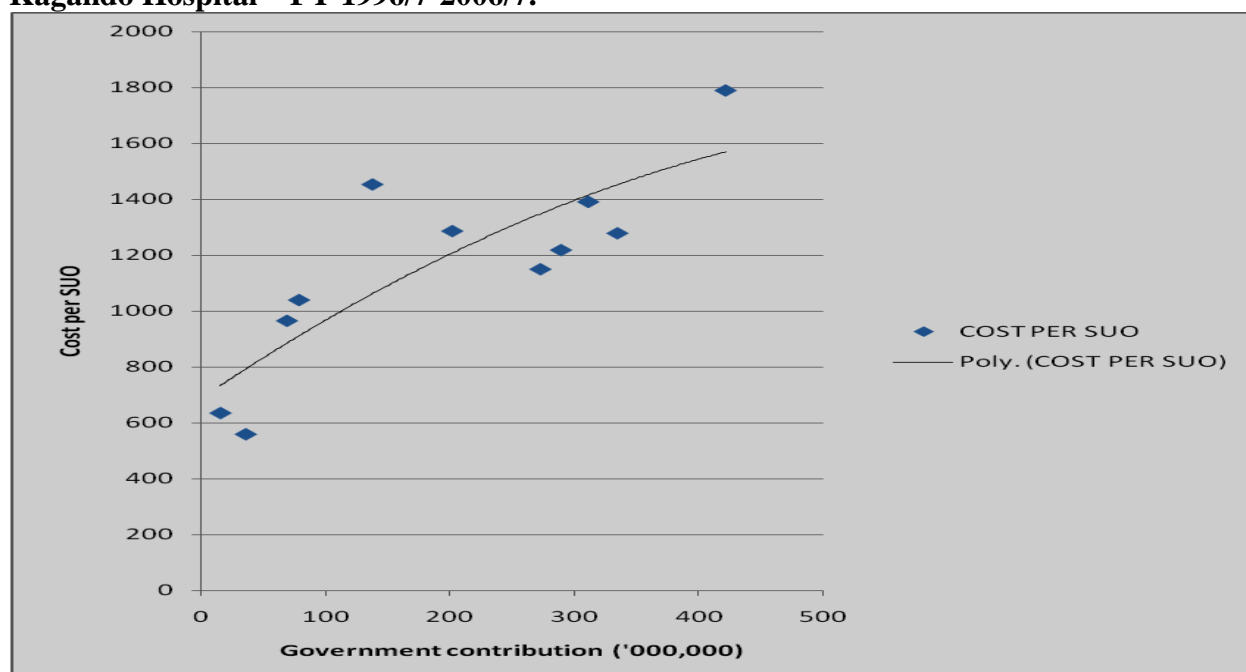
FY	1996/7	1997/8	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7
Cost per SUO	635	559	964	1039	1452	1149	1390	1278	1218	1789	1286

The cost per SUO revealed an overall increasing trend from 964 in FY1998/9 to 1452 in FY 2000/1 then declined from FY 2001/2 to 2004/5 and shot up to 1787 in FY 2005/6

4.3.4 Relationship between total cost per SUO and Government contribution for Kagando Hospital – FY 1996/7-2006/7.

The cost per unit of output (SUO) is expected to reduce with government financial support to PNFP hospitals to reflect more utilization of health service delivery. The relationship between cost per SUO and Government Contribution revealed an upward trend as shown in figure 10.

Figure 10: Relationship between total cost per SUO and Government contribution for Kagando Hospital – FY 1996/7-2006/7.



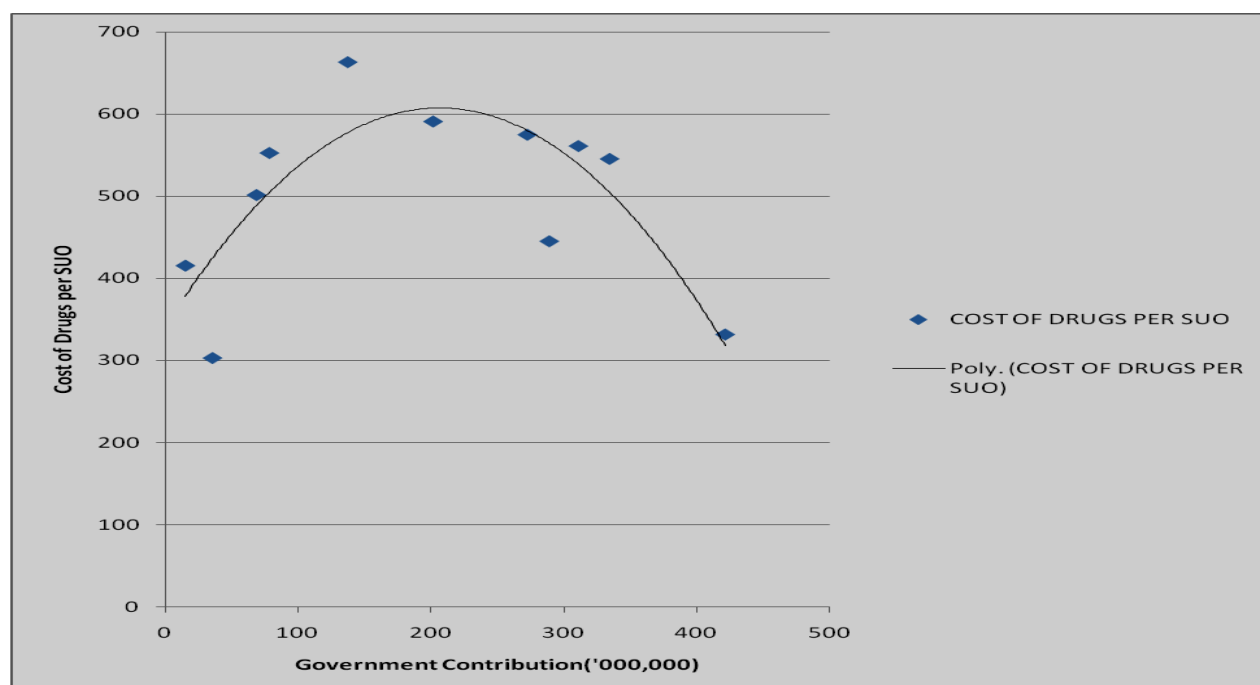
From figure 10, as government contribution increased from UG X 15 million in FY 1996/7 to 137 million in FY 2000/1 the Cost per SUO increased from 634.6 to 1452.3 respectively. However, in the FY 2003/4 when government contribution increased, the Cost per SUO decreased implying that government resources were used to subsidise fees of services so that for the same cost there was more utilization of health services at Kagando hospital.

4.3.5 Relationship between cost of drugs per SUO and Government contribution for Kagando Hospital FY 1996/7-2006/7

The cost of drugs per SUO is a measure of efficiency of a health facility. As the cost of drugs per SUO decreases a healthy facility exhibits efficiency and as the cost of drugs per SUO increases a

healthy facility is said to be exhibiting inefficiency in health service delivery. Details are summarized in Figure 11.

Figure 11: Relationship between cost of drugs per SUO and Government contribution for Kagando Hospital FY 1996/7-2006/7



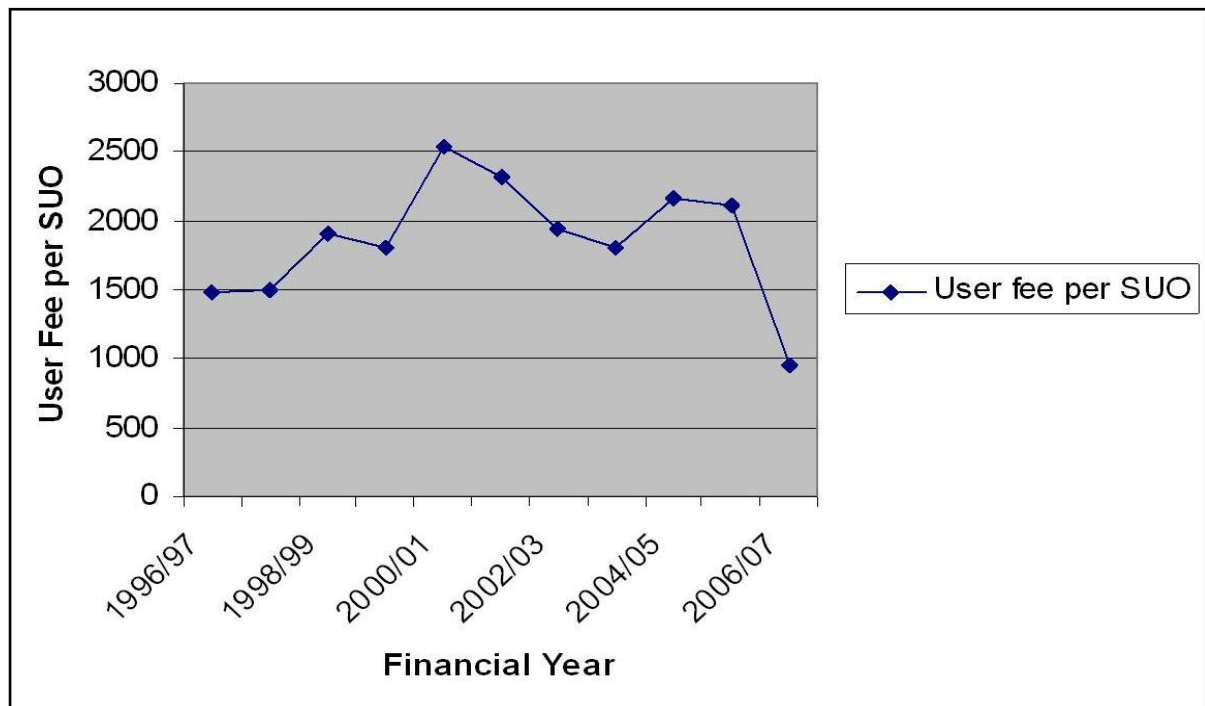
For the period 1996/7 as government contribution increased from UG X 15 million in FY 1996/7 to UG X 137 million in FY 2000/1, the Cost of drugs per SUO increased from 415.4 to 663.1 revealing less utilization of health services at the hospital. Figure 4.11 further revealed that in FY 2005/6 when government contribution was maximum at UG X 421 million the Cost of drugs per SUO decreased to 331.6 implying increased utilization of health services at Kagando hospital.

4.3.6 User fees per SUO

Financial access is demonstrated by the average fees paid for SUO. A reduction in fees paid by patients for one SUO makes the more vulnerable more able to afford services than before while a rise in fees paid by patients for one SUO indicates that the more vulnerable are unable to afford health services. In this study, we explored whether user fees per SUO was reducing as a measure

of affordability of health services over the period of study. The trend of user fee per SUO is shown in figure 12.

Figure 12: Trend of variation of User fees per SUO for Kagando Hospital 1996/7-



User fee per SUO increased between FY 1997/8 and FY 2001/2 but then took on a declining trend for the rest of the years up to 2006/7 implying that that the more vulnerable were able to afford services than before 2001/2. Overall, the user fee per SUO revealed a declining trend between FY 2001/02 and 2006/07.

CHAPTER FIVE

DISCUSSION

5.1 Financial and Human Resource Support through PPP to Kagando Hospital

Government financial support through PPP constituted 18.42% of the total budget for Kagando hospital over the period under study. This contribution is lower than revenues received from donors and user fees of 26.74% and 47.61% of total budget respectively. This finding is in agreement with UCMB-UPMB-UMMB (2007) which estimated government contribution to PNFP facilities to be at 15% to 36% of the facility total budget.

Trends in government financial support revealed a general increase in government financial support to the hospital. However, a decline in government funding was noted in the FY 2004/5 and 2006/7. One of the reasons for this decline included budget cuts from the central government. The above findings therefore imply that any fluctuations in government funding have a direct effect on the budgets of government supported health facilities. Similar findings have been reported in other developing countries where hospital budgets are dependent on government support (Cush, 2005).

A higher proportion of Kagando Hospital ‘doctors’ compared to ‘nurses’ and ‘other employees’ were seconded staff. However, the proportion of 9 to 14 % for seconded staff is still lower compared to 28% rise in staffing of medical staff in the public sector (UCMB, UPMB and UMMB, 2007). The findings in addition agree with Moody (2004) who reveals that health care delivery is labour intensive and thus the workforce determines productivity and quality of services.

5.2 Hospital Service Delivery Outputs

5.2.1 Immunisation

We observed a decrease in immunization trends with corresponding increment in government financial support but also a reduction in numbers in spite of stepped PHC funding in some instances. This may be attributed to changing priorities in budget allocations over the entire period under study. It is possible that while government funding through PHC increased more allocations could have been made to other activity outputs than immunization for the period where numbers in total immunization reduced. The role of other factors that reduce immunization numbers can not be underestimated. Kasule (1992) argues knowledge, attitudes and practices of a community can affect immunization coverage rates.

5.2.2 Antenatal care (ANC), Deliveries and Surgical Operations

The overall pattern of Antenatal Care (ANC) revealed a declining trend despite of the increase in government funding. Mothers can prefer to go for re-attendances of ANC in other health facilities nearest to them not necessarily the health facility of first visit. Given that the illiteracy levels in Kasese among women is low (37%) and that the majority of women are dependant on men for financial support, it is possible that the above factors could have played a role in the decline in utilization of ANC. We can not under estimate the role of other factors such low sensitization among communities on importance of ANC and health care provider factors in contributing to the low ANC uptake irrespective of the increased government funding. This is further supported by Nyane (2007) in which Antenatal care drop out among pregnant women may be attributable to the level of education, clients perception on ANC services and knowledge about ANC.

As the financial support to Kagando hospital increased the total number of deliveries did not significantly increase. This can partly be explained by the existence of the two government owned health centres, Nyabirongo HC III and Kyondo HC III that have nurses – ‘Mid wives’ offering a similar service within a radius of 5 km. These findings are in agreement with Munaaba (1995) where distance to a health unit was a major factor in determining professional care for delivery. Other factors that could explain such trends include traditional birth attendants, ethnocentricity, position adopted at child birth, staffing at health units (WHO chronicle 36 (3) 1982), Nyamawe (1992) & Anderson (1986).

The increasing trend in number of Surgical Operations per year in some instances could be attributed to the increasing number of government seconded medical doctors. This observation confirms that government secondment of health workers to PNFP health units is an endeavour to work together with the private sector to improve the performance of the health system in general (Lochoro et al, 2006) and thus human resource remains the central gist that determines the overall effects of the reforms (Rigoli, 2003).

5.2.3 Outpatient Department (OPD) and Total Admissions/or Inpatient

When the OPD utilization and admissions are compared to government support, OPD utilization and number of Admissions steadily increased with increasing government financial support from FY 2000/1 and reduced when government funding was lowered in 2006/7. This observation confirms that the support through PPP had a positive influence on health service delivery and utilization at Kagando hospital. Outpatient Attendance in government and PNFP units is a measure of utilization of health services, and is used as a proxy measure for both the quality and

quantity of services,(supply side) and the health seeking behaviour of the population (demand side). The initial increase in new OPD attendance was attributed to the reduction of user fees and flattening of fees in PNFP facilities (MOH, 2007).

5.2.4 OPD patient: Doctor ratio and OPD: Nurse ratio

When the hospital employed the highest number of doctors, the workload for doctors was lowest compared to the year when the hospital employed the lowest number of doctors. This observation confirms the fact that government secondment increased the number of doctors at Kagando hospital which reduced doctor workload and thus likely to increase staff productivity in terms of service delivery. On the other hand, as the number of nurses in Kagando hospital reduced the nurses' workload increased and hence likely to have reduced staff productivity.

5.2.5 Inpatient: Doctor ratio and Inpatient: Nurse ratio

The Inpatient: Doctor ratio was high when Kagando hospital had low numbers of doctors and this led to increased workload for doctors in the Inpatient wards. However, in the year when the hospital employed the highest number of doctors, the workload for doctors was lowest. Hutchinson(1999) & Barnum and Kutzin, (1993) found out that in developing countries, Uganda inclusive, two main aspects of quality that have been documented to influence service utilization significantly are availability of skilled personnel and essential drugs .

The Inpatient: nurse ratio increased as the number of nurses in Kagando hospital reduced which increased the nurses' workload in the Inpatient wards and reduced for the rest of the period as the number of nurses employed increased. These findings are in agreement with UCMB- UPMB,-

UMMB (2007) who found out that there are high levels of attrition in PNFP hospitals at 16 % in 2005/6 and human resource gap represented a proportion of 54 % of the total human resource gap in the health sector. Also agree with WHO(2000) who note that Gaps in human resources for health in numbers, skill mix and distributions continue to pose a challenge for effective service delivery in Uganda. In a hospital, the inpatient care departments consume the largest share of inputs. Maurizio et al (2003) notes that the way these inputs are organized and managed can be the predominant factor in determining the overall efficiency of a hospital.

5.3 Standard Unit of Output

The trend of SUO per year for Kagando hospital showed an overall declining pattern despite of increased government funding implying a reduction in access to health services. However, in some instances, the SUO per year increased with increased government funding to the hospital which implies increased access to health services by the population for some particular years. The declining trend of SUO can be attributed to the reduction in total admissions or inpatient, OPD attendances, immunisation and ANC attendances observed in the initial years. This finding is in agreement with MOH (2007) who found that over the 2 years of the HSSP II, there has been a worrying trend of reversal with overall declining outputs, including OPD, IP and Primary health Care services like Antenatal Care and immunization. These findings disagree with UCMB-UPMB-UMMB,(2007) who noted that SUO per year from a sample of 27 hospitals(65% of PNFP hospitals), shows constantly increasing values of SUO and that the slight drop in SUO is undoubtedly a consequence of the reduced support from government to PNFP health units .

5.3.1 SUO per staff (Staff productivity)

Staff productivity which is measured by Standard Unit of Output (SUO) produced per staff showed an overall rising pattern in comparison with financial and human resource support from government. The upward trend of SUO produced per staff showed efficiency in use of human resource. In some instances staff productivity reduced and this can be attributed to the declining trend in SUO when total admissions, OPD attendances, immunization and ANC were declining in Kagando hospital. However, this could also be attributed to staff attrition when total staff reduced with reduced SUO. These findings are in agreement with UCMB, UPMB, UMMB (2007) who reveal that efficiency gains are lost in PNFP hospitals due to increasing staff attrition in a study carried out in 65 % of PNFP hospitals in Uganda.

The average SUO per staff of 1389 for Kagando hospital agrees with findings of MOH (2007) who found out that a staff on average was responsible for 1,395 units of outputs. The findings agree with Giusti et al (2004) who carried out a study on pro-poor health services and found out that SUO per staff remained stable, and in some cases showed a decline.

5.3.2 Unit Cost per standard unit of output

The total cost per standard unit of output revealed an overall upward trend in comparison with increase in government financial support to Kagando hospital implying that the hospital lost efficiency gains. A steep rise between FY 1999/00 and 2000/01 can better be explained by the significant reduction in the standard unit of output due to reduction in hospital outputs- admissions, Immunisation, ANC and OPD attendances, and increasing costs of service delivery at the hospital. This observation is in agreement with the findings of UCMB- UPMB- UMMB

(2007) who noted that with increasing cost of human resource; the cost per unit of output (SUO) is increasing even in lower level health facilities as hospitals particularly increase salary levels in attempt to retain staffs. However, this finding disagrees with Maurizzo et al (2003) who asserted that an increment in expenditure alone does not guarantee efficiency but the way inputs are organized and managed can be the predominant factor in determining the overall efficiency of a hospital.

5.3.3 User fee per SUO

The results provide some evidence that the hospital has become more pro-poor with an overall trend of declining fees paid per standard unit of output. It should be noted that drop in user fees makes the more vulnerable to afford services than before and hence increased utilization of hospital services by the poor. The findings are in agreement with McPake (1993) who noted that although fee reductions were not targeted at the poor, it is known that utilization by the poor is more elastic to fee adjustments. Bennet (2004) showed that substantial fee increases resulted in immediate drops in demand, however, with higher income groups showing a less elasticity in demand over time. Studies done in Uganda (WHO/MOH, 2002) also found out that user charge rates and availability of drugs have a rapid effect on health service utilization. The mild increase of user fees reflects the pressure on the sub-sector of the increased cost of service production and reduced government support (UCMB-UPMB-UMMB, 2007).

5.4 Limitations of the Study

There was none availability of some records on personnel employed between 1996/97 and 2001/02. This might have limited the analysis on some variables for that period. However, given that the data was collected for a long period – over 10 years, this did not significantly affect the validity of results since the vast of the records accessed allowed meaningful comparisons.

Data on immunization and ANC was composite and not disaggregated and thus difficult to differentiate between first, second, third etc (ANC and immunisation), new and old re-attendances. However, this did not affect the validity of the results based on the economic model (SUO) applied which takes into consideration use of aggregated data on the outputs.

Although efficiency of hospitals may be measured by use of Frontier methods of efficiency measurement such as the linear programming techniques (for instance, data envelope analysis) and econometric techniques (for instance, production and cost functions), in this study, these techniques were not appropriate because the study was focusing on a single health facility.

There are other commonly used ratios as measures of operational efficiency that have not been looked at in this study. These include: bed occupancy rate, turnover ratio, turnover interval and average length of stay. These were not used due to inadequate data availability.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Kagando Hospital received financial support from government to the tune of UGX 2.2 billion over the eleven years amounting to 18.4 % of the hospital budget.

Government seconded staff to the hospital accounted for 9-14 % of the staff establishment, which is still low to significantly improve hospital efficiency in service delivery.

The main staff seconded by government is medical doctors and nurses with the former accounting for 18% to 66% of the total number of doctors employed in the hospital. Seconded nurses only account for 10% - 18 % while 'other employees account for 5% - 10%.

The hospital service delivery outputs that reveal an increasing trend include Admissions while deliveries and surgical operations reveal a flattened increasing trend. Hospital service delivery outputs that show a declining trend include Immunizations, ANC and OPD attendances

There is evidence that some hospital service delivery outputs increased due to increase in financial and human resource support to the hospital and also a reduction in outputs due to reduction in support from the government.

The overall trend of Standard Unit of output for Kagando hospital reveals a declining trend implying a reduction in access to health services over the period 1996/7 to 2006/7. The overall rising trend of SUO per staff reveals efficiency in utilization of human resource at Kagando hospital.

There is evidence that the hospital has become more pro-poor with an overall trend of declining fees paid per standard unit of output. A reduction in user fees per SUO enables the more vulnerable to afford and access services.

6.2 Recommendations

Government grants to Kagando hospital should not be overlooked in view of the cost of health service delivery. The grants should be maintained and increased where possible to ensure sustainable and increased utilization of health services by the community.

The government of Uganda through the PPP strategy should continue secondment of staff to Kagando hospital focusing on seconding more doctors to the hospital since they offer specialized services that can improve the health outputs of the hospital in critical departments.

Kagando hospital should recruit more doctors in addition to those seconded by the government to increase the health outputs of the hospital. This will improve staff workload and efficient utilization of the human resource at the hospital.

Further research into the efficiency of health service delivery at Kagando Hospital should be carried out taking into account quality of care indicators in addition to the standard unit of output. A study is recommended to assess the quality of service delivery in the periods before and after the PPP in health at Kagando hospital in comparison with government health facilities. This will provide valuable information that would guide investments into quality improvement.

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APPENDICES

Appendix 1: Letter of introduction

(FOR KAGANDO HOSPITAL ADMINISTRATORS)

RE: RESEARCH ON EFFECTS OF PUBLIC-PRIVATE PARTNERSHIP ON EFFICIENCY OF HEALTH SERVICE DELIVERY IN UGANDA: A CASE STUDY OF KAGANDO HOSPITAL IN KASESE DISTRICT.

I am a student of Makerere University in the Faculty of Economics and Management (FEMA) and I am undertaking research on the above topic that will lead to an award of Master of Arts in Economic Policy and Planning of Makerere University.

Kagando hospital has been selected as a case study for the research and the Administration will assist to respond by providing the required data based on the hospital records on the topic under study. The data that you will provide will be treated with utmost confidentiality and under no circumstances will it be personalized. The basic research ethics are to be observed and adhered to.

Kindly avail the data on each of the issues raised as objectively as possible. In each section of the checklist, instructions are given on how to categorise the data.

Your positive and quick response will be highly appreciated.

Yours faithfully,

Mugisa Masereka Godfrey
Principal Investigator

Appendix 2: Checklist for hospital inputs and outputs

SECTION A: INPUTS OF THE HOSPITAL

I have some questions about staffing for Kagando hospital. Please tell me how many staff within the categories indicated below have been employed by this facility per year for the period under study regardless of the person's actual assignment or specialist studies:

Note: Definition and measurement of staff categories

Doctors: Total number of medical doctors (physicians, pharmacists, dentists etc including residents and interns) per year

Nurses: Total number of nurses, including professional, enrolled, registered, community nurses, and nursing aids per year

Other employees: Total number of paramedics and assistants, technicians and assistants, administrative staff; and other general staff per year.

Year	1996/7	1997/8	1998/9	1999/00	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7
Category											
Doctors											
Nurses											
Other employees											
Total Number											

Please tell me the number of staff in the category indicated below who have been seconded by government to Kagando hospital per year for the period under study

Category	1996/7	1997/8	1998/9	1999/00	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7
Doctors											
Nurses											
Other employees											
Total Number											

Indicate how many beds Kagando hospital has been having per year for the period under study.

Year	1996/7	1997/8	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7
Total Number of Beds											

Indicate the total cost on drugs per year for the hospital for the period under study.

Year	1996/7	1997/8	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7
Total cost of drugs											

Now, I would like to ask you about the sources of revenue or funding for Kagando hospital. Tell me if the facility received any revenue or funding from any of the listed sources for the period under study and the amount. Also indicate the estimated budget in the years specified below.

Amount in Ug shillings

Source of revenue	1996/7	1997/8	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7
Government Contribution to PNFP hospital											
User fees											
Donor agencies											
Sales											
Other income											
Total revenue											
Budget Estimates for the year											

PNFP: Private Not-For-Profit

EXPENDITURES

(a) Direct Expenditures for Kagando Hospital per year

Expenditures	1996/7	1997/8	1998/9	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Total Direct Expenditure											
Salaries local											
Treatment of staff											
Training & welfare											
Canteen & food											
Drugs & medical											
Consumable supplies											
Transport											
Fees waived											
Power											
Donation											
Bad & doubtful debts											
Primary health care											
Fistula management											

(b) Capital Investments costs; including costs on vehicles, buildings, furniture and equipment, and hospital equipment

Year	1996/7	1997/8	1998/9	1999/00	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7
Total capital investment costs											

Joint Medical Store Credit Line for medicines grants

Year	1996/7	1997/8	1998/9	1999/00	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7
Total Credit Line (ugshs)											

Highest paid and lowest paid employee; Gross salary per year in gushes

Year	1996/7	1997/8	1998/9	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
Highest paid employee											
Lowest paid employee											

SECTION B: OUTPUTS OF KAGANDO HOSPITAL

Now I would like to ask you about the health care outputs of Kagando hospital per year for the period under study.

Definition and Measurement of output Variables

Admissions: Total Admissions per year

Outpatient Department Attendances: Total Number of Outpatient department attendances per year

Immunisations: Total Number of children immunized per year

Deliveries: Total Number of Deliveries in the hospital per year

Antenatal Care: Total Number of mothers attending Antenatal Care per year

Year	1996/7	1997/8	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7
Output Variables											
Admissions											
Outpatient attendances											
Deliveries											
Immunizations											
Antenatal Care(ANC)											
Surgical operations											