INFLUENCE OF TANGIBLE RESOURCES ON THE PERFORMANCE OF COUNTY HEALTH SERVICES, KENYA

BY

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NOVEMBER, 2013

DECLARATION

Declaration by the student

I declare that this project is my original work. It has not been presented for a degree in any other University.

Signed…….. Date……

Peter Joseph Okoth

Reg.D61/64267/2011

Declaration by supervisor

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

Signed……. Date…….

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DEDICATION

This work is dedicated to my late grandmother Hellena Aloo for the great effort in infusing values of hard work and honesty in me.

ACKNOWLEDGEMENT

I take this opportunity to express my profound gratitude to University of Nairobi fraternity and my supervisor Dr. Vincent Machuki for his exemplary guidance, unmatched scholarly commitment, monitoring and constant encouragement throughout the course of this research. May the almighty bless him abundantly.

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ACRONYMS AND ABBREVIATIONS

ARV- Anti-retroviral
BSC- Budget Service on Curative
BSP- Budget Service on Preventive
CU- Community Units
DCSA- Deliveries Conducted by Skilled Personnel
EMAT- Equipment for Maternity
EMCFPU- Equipment for Maternal Child Health
FBMM- Facility Based Maternal Mortality
FIC- Fully Immunized Children
HIVPM- HIV Pregnant Mothers on HIV Drugs
HOSP- Hospital
HSWT- Households with Latrines
KRCHN- Kenya Registered Community Nurses
LAB – Laboratory Equipments
MADR- Maternal Audits/Death Rates
MO- Medical Officers
OUTP- Outpatient Equipments
PCF- Primary Care Facility
PCOU- Per Capita Outpatient Utilization
PHO- Public Health Officer
PWANC- Pregnant Women Attending Ante Natal Clinic
RCO- Registered Clinical Officers
TAMB- Transport Ambulance
TBCR- Tuberculosis Cure Rate
TBP – Tuberculosis Patients
TMGT- Trained Management Staff
TSV- Transport Support Utility Vehicles
WRFP- Women of Reproductive age on Family Planning

ABSTRACT

This research project investigates the influence of tangible resources on the performance of county health services in Kenya using resource based view approach. The research collects secondary data of all counties from ministry of health records and reports regarding current tangible resources, owned by county health services departments, and performance indicator achievements (over the last three years) then analyzes the relationship between the two variables to identify tangible resources associated and most useful to performance. The findings of this study confirm that there is tangible resource heterogeneity across Kenya's county health departments that explain performance indicator achievement differentials. Not all resources contribute to superior performance. It's just some specific resources that are responsible for superior performance. These are the critical strategic resources that the study suggests may be currently needed for improved performance in given health indicators. The study makes a recommendation for an improved approach that uses a composite performance index, a single measure of overall health performance, upon which resources are evaluated. This study that relates health resources with performance has the potential of advancing resource based theory from being a mere theoretical framework to being a practical framework for practicing managers, policy makers and planners in the health sector.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

One of the major objectives of strategic management is to provide scholars and practitioners with management thoughts, approaches, and tools to enable firms formulate and implement strategies that generate competitive advantage in the environment in which they operate. According to Grant (2005), the critical requirement for a firm's success is its ability to establish competitive advantage. Barney (2007) defines competitive advantage as the ability of an organization to design, produce, and market products or services that are superior to those of competing firms in the same industry based on price and non price qualities. Grant (2005) noted that a firm possesses competitive advantage over its rivals in the same market when it earns a persistently higher rate of profit. Perhaps because competitive advantage is difficult to measure, a series of studies have sought to link strategic resources and performance.

Understanding why some organizations outperform others is a central goal of strategic management research. Resource based theory (RBT) and Dynamic capability theory (DCT) have emerged as key perspectives guiding inquiry into the determinants of organizational performance (Crook, Ketchen, Combs and Tood, 2008; Barney, 2007). RBT asserts that an organization achieves competitive advantage over others because it either has resources and capabilities that others do not have or others have difficulty in obtaining (Johnson et al, 2008). Penrose (1959) views organizations as bundles of productive resources and capabilities which can be used to generate competitive advantage and superior performance. DCT, an offshoot from RBT (Crook et al, 2008)

emphasizes resource development and renewal as a source of sustainable competitive advantage. It posits that for firms to succeed they must have the ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environment (Teece, 2000).The two theories provide the knowledge base for studying the relationship between resources ,strategy development and choice, and performance.

There are marked differences across Kenya's counties in terms of resource endowment in the county health service body, an agency or organization mandated to provide health services to the county population. These organizations possess a wide range of resources that may have direct or indirect impact on their performance depending on how they are utilized to generate value. County health services organizations just like other organizations are heterogeneous and cannot be considered identical in terms of strategically relevant resources.

Collis and Montgomery (1995) have argued that no two organizations have the same assets, skills, organization culture or same combination of resources in the same competitive environment at one point in time to be able to perform their activities perfectly in the same manner. There will always be differences in terms of quality, quantity, combination and utilization of resources across these health organizations. Several contextual factors directly or indirectly affect the competitive strength of individual organizations and this poses a challenge in identifying specific resources that are relevant to strategic objectives and the extent to which resources can translate into superior performance.

1.1.1 Tangible Resources

The concept of tangible resources is associated with RBT (Grant, 2005). Organizations are viewed as bundles of productive resources that are tangible and intangible and capabilities which can be used through an administrative framework to generate competitive advantage and superior performance (Penrose, 1959). Resources are inputs into productive processes (Grant, 2005). Barney (2007) and Grant (2005) are agreed that not all resources can lead to superior performance and that advantage lie in selected resources that are superior to those of competitors. They argue that for resources to be strategic they must be valuable, rare, difficult to copy and non substitutable and only then can they be able to create and sustain competitive advantage.

Tangible resources are the physical assets of an organization such as plant, labor and finance (Johnson et al, 2008). Physical resources are; the number of machines, buildings or the production capacity of the organization. The nature of these resources such as; the age, condition, capacity and location of each resource, will determine the usefulness of such resources. The tangible aspects of financial resources include capital, cash, debtors and creditors, and suppliers of money. The tangible aspects of human resources include the number and other quantifiable people characteristics of the organization. Tangible resources, unlike intangible resources, are easily imitated by rival firms and can only make firms achieve average outcome, a competitive parity at threshold level or temporary advantage at superior level (Barney, 2007).

The argument is that organizations with superior resources or that can identify and efficiently and effectively manage these specific superior resources in line with their missions and visions and strategic objectives can outperform others in the same industry with either resources poorly matched with strategic objectives or ill managed (Adero, 2012). The quantity of resources and or the capacity of those resources to generate superior services in organizations are relevant research issues in strategic management in as far as the search to the answer to the question of why some organizations are more successful than others is concerned (Newbert, 2007). Tangible resources and performance are the two constructs used in this RBT based study.

1.1.2 Organizational Performance

Organization performance refers to the extent to which an organization meets its strategic objectives and other results as disaggregated in the organization result hierarchy including input, output, outcome and impact. It is the actual result measured against intended goals and objectives. Organizational performance is an outcome achieved when an organization successfully formulates and implements a value creating strategy which enable customers receive a service or product of value greater than what they are willing to pay for (Barney, 2007).

Stakeholders view value creation in terms of more returns compared with an alternative investment of similar risk, the benefit of forgoing an alternative investment of similar risk. Performance indicator refers to numerical information that quantifies input, output and dimension of process and outcome. The measurement relates to performance but may

not be an exclusive measure of such performance for example the number of complaints is an indicator of dissatisfaction but is not an exclusive indicator of it. Some of the Performance indicators used include growth in market share, profitability, quality product or service, innovation (Porter, 1985), effectiveness in meeting set objectives and efficiency in terms of cost reductions (Johnson et al 2008).

The use of balanced scorecards (Kaplan and Norton, 2001) by organizations has gained ground .The balanced scorecards combine both qualitative and quantitative measures and acknowledge the expectation of different stakeholders and relate an assessment of performance to choice of strategy. This approach has been recognized by many scholars because of its comprehensiveness and suitability in the increasingly competitive environment. Contemporary thinking includes performance in areas of social and environmental responsibilities as part of results to be considered when measuring organizational performance (March and Sutton, 1997). However, management being sensitive to contexts in which it is practiced, organizations use different approaches in measuring their performance. For the health sector, performance can mean the extent to which county health services contribute to specific health sector strategic objective. In this case, Performance measurements of defined group of outputs are used as indicators or monitors of performance of a given strategic health objective according to Health sector strategic plan (KHSSP, 2012-2017).

Performance of health systems has been a major concern to policy makers for many years. Many countries have recently introduced reforms in the health sector with the

explicit aim of improving performance (Collins, Green and Hunter, 1999). There exists an extensive literature on health sector reform, and recent debates have emerged on how best to measure performance so that the impact of reforms can be assessed (Goldstein& Spiegelhalter, 2005). Measurement of performance requires an explicit framework defining the goals of a health system against which outcomes can be judged and performance quantified.

Evans et al. (2000) describe how the performance of countries in terms of meeting one important goal – that of maximizing population health – can be measured. In addition to considering health, attainments of other health goals are included in terms of four other indicators linked to the intrinsic goals of a health system.

The analytical framework used for characterizing the goals of a health system is derived from Murray and Frenk (1999). The first is improvement in the health of the population (both in terms of levels attained and distribution). The second is enhanced responsiveness of the health system to the legitimate expectations of the population. As with health outcomes, both the level of responsiveness and its distribution are important. The third intrinsic goal is fairness in financing and financial risk protection. The aim is to ensure that poor households should not pay a higher share of their discretionary expenditure on health than richer households, and all households should be protected against catastrophic financial losses related to ill health. However this study used selected performance indicators provided by KHSSP (2012-2017).

1.1.3 Health Sector in Kenya

Health services in Kenya fall under public and private sector organizations that are directly under the control of the government through the ministry of health. The sector is subdivided into medical services, public health and sanitation, and research subsectors.

Kenya health sector policy (KHSP, 2012-2030) offers the overall direction for the health sector. It orientates the sector to Kenya vision 2030 besides recognizing international obligations such as millennium development goals (MDG). It is grounded on the constitution that provides for among others the right to the highest attainable standard of healthcare to the citizens. The document provides a direction on the organization of service delivery system and recognizes devolution of services to counties as a way of enhancing service delivery.

To achieve the policy goal and broad objectives, KHSP (2012-2030) through Kenya essential package for health (KEPH) identifies and defines four tiers and five cohorts around which health care service delivery is organized. The four tiers are the community as tier one, dispensaries and health centers as tier two, county hospitals as tier three and national referral hospitals and research institutions as tier four. The services are delivered taking into account the human life cycle (cohorts) unique needs. Cohort one is the pregnancy and newborn of up to 28 days, cohort two is the age bracket between 29 days and 59 months, cohort three is between 60 months and 19 years, cohort four is between 20 and 59years and cohort five applies to those of over 60 years. Investments in the health sector takes into consideration disease burdens in the cohorts.

The constitution has defined the role and scope of the national state for health and county health services. Under schedule 4 of Kenya's constitution (Constitution of Kenya, 2010), health services are devolved except for regulation and standardization that fall under national state for health. The national state for health remained with regulatory, standards, State autonomous government agencies (SAGS) and residual functions. There are 8018 health facilities distributed across Kenya as per the ministry of health record (Health at a glance, 2012). Health financing comes from government of Kenya grants, donors (based on programmatic areas), Cost sharing (FIF) and national health insurance fund (NHIF). Results are expected to be met through investments in service delivery system, leadership and governance, infrastructure and equipments, commodity and technology, information, workforce and health financing. The governments and stakeholders are expected to observe the core principles of equity, involvement and participation, right based approach in resource allocation and service delivery.

1.1.4 County Health Services

County health services is a county department carrying out devolved functions under schedule 4 of the current constitution and include responsibilities such as overseeing clinical services, preventive and promotion of health and health planning (Constitution of Kenya, 2010). These counties not only compete for scarce resources from the national and county governments, donor agencies and other partners such as NHIF but also from paying patients as the main sources of funding and therefore need to meet acceptable standards of performance in order to attract, maintain and improve stakeholders support.

Resources owned by the county health services include the health facilities, other physical facilities, and the health work force among others. Planning and acquisition of resources is determined more by political legislation than market conditions. Since there are marked differences in resource endowment across county health services in Kenya their success depends largely on the ability of their managers to identify specific resources that impact on performance and how effectively they deploy and manage scarce resources available to them to be able to deliver acceptable performance standards that meet expectations of their stakeholders. County health service stakeholders include the national and county governments, the county community, patients, health employees, donor organizations, creditors and suppliers among others. Because stakeholders provide resources, they have interest in how those resources are utilized to achieve their expectations.

For county health services in Kenya, competitive advantage means providing better quality health care and services that lead to higher outcome than competing services from other counties thus attracting support and more funding from the two governments and other stakeholders. The growing concern among health managers and planners is how to identify specific resources that are currently critical to performance and the best way to allocate and productively use available scarce resources to achieve quality performance. Most county health services in Kenya have registered varying levels of performance over some past years with some recording fluctuating performance while some have consistently indicated an upward trend. Since there are marked differences in resource endowment across counties in terms of quantity, quality and how they are used, it is not

clear whether there is any link between resources and performance in county health services in Kenya.

1.2 The Research Problem

According to Barney (2007), most strategic management researchers agree that internal resources owned by an organization may provide it with a more appropriate strategic choice on how to compete in the external environment and provide an indication of the level of performance expected (Barney, 2007). The extent to which internal resources can translate into superior performance in specific organizations is still not well understood, especially under deprived conditions. Organizations differ in terms of amount and quality of strategically relevant resources and how they are utilized but it is still not clear how these differences can lead to competitive advantage and superior performance.

County health services can only attract paying patients and support from stakeholders if they meet acceptable standards of performance. County health managers are faced with challenges such as which area they currently need to prioritize and invest in so as to have superior impact on performance in areas of national and county concerns. Employees in the health sector have always attributed health sector woos to inadequate infrastructure, equipments and key workforce shortages among other tangible inadequacies. This complaint raised curiosity that triggered this study.

As much as existing literature has reported close links between tangible and intangible resources and performance in organizations, most of the researches have focused on

business organizations and even so, business organization outside Africa. There are very few literatures focusing on local organizations as far as resources and performance is concerned. Liu, Timothy and Gao (2010) reviewed RBT approaches as used in banking industry and observed that the relationship between resources, strategy and performance when explored further could be a useful analysis tool. It recommended that further studies be done to establish the role of tangible and intangible resources in industries such as banking in which sustainable competitive advantage are rare.

Tuan and Takayashi (2009) investigated the link between resources, organizational capabilities and performance of Vietnams supporting industries and reported positive links between groups of resources, capabilities and performance. Gruber, Heinmann, Bretel and Hangeling (2010) examined configuration of resources, capabilities and performance in technology ventures and recommended further research on the contribution of tangible and intangible resources on performance of organizations operating in specific industries. Adero (2012) studied the influence of tangible and intangible resources on performance of public secondary schools in Bondo district, Kenya, and reported close links. According to the reviewed literature, no known study had been done on the influence of tangible resources on the performance of counties in terms of health services in Kenya. What is the influence of tangible resources on the performance of county health services in Kenya?

1.3 Research Objective

The objective of the research was to establish the influence of tangible resources on the performance of county health services in Kenya.

1.4 Value of the Study

The findings in this study are expected to contribute to theory building since the study assessed those findings against other empirical support for what is argued to be one of the most important widely accepted theories of strategic management, the RBT (Newbert, 2007). It assessed resource heterogeneity in terms of tangible levels and types in county health departments across Kenya and performance differentials in various performance indicators. Using resource heterogeneity to explain performance differentials is a central tenet in RBT. This study has advanced knowledge in the area of resources and performance within the confines of RBT and in the context of health and provided a conversion from the theoretical framework to a practical framework.

The findings of this study can improve the understanding of policy makers, planners and health managers in the ministry of health and county governments regarding the role of tangible resources on health performance. Policy makers may be forced to review and craft policies that enhance equity in the allocation of strategic resources, resources that impact significantly on performance as demonstrated in this study. The policies should take into account each performance area as each has its own specific strategic resource requirements.

This study can help health planners and health managers practice evidence based planning. Investing in resources which do not produce results is considered wastage of scarce resources. This study can help in projecting results thus helping in setting realistic targets in performance areas. Managers can use this study to identify critical resources in various performance areas and prioritize them in their health investments plans. The study may also influence health planners in formulating plans that enhance equity in resource allocation and deployment hence help correct resource disparities in and across counties.

Health facility managers may benefit through discovery of critical resources that have direct impact on facility and county health performance. This may also help them embrace evidence based performance planning in their institutions. Health management teams will be encouraged to improve performance by focusing more on acquisition and effective use of resources found to be crucial to performance and the need to match resources strength with target objectives. Findings may also be important in laying emphasis on the need to monitor future trends so as to update strategically relevant resources to cope with changes if superior outcome is to be achieved. It is hoped that this was the very first research to utilize RBT to investigate the influence of tangible resources on the performance of county health services in Kenya.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on the resource based theory, dynamic capability theory, tangible resources, organizational performance, tangible resources and organizational performance, conceptual framework, methodological and empirical evidence.

2.2 Theoretical Foundations of the Study

Recent years have witnessed strategic management scholars increase their focus on internal resources and capabilities owned by organizations as a foundation for developing strategies that lead to competitive advantage and superior performance. This thinking and approach draws from two theories; the resource based theory of the firm and the dynamic capability theory (Newbert, 2007).

Resource based theory asserts that firms can earn supra-normal returns if and only if they have superior resources and those resources are protected by some form of isolating mechanism(Rumelt, 1984 as cited in Barney,1991, pp120) preventing their diffusion throughout industry(Grant, 2005). RBT views organizations as bundles of productive resources that are tangible and intangible and capabilities which they can use to generate competitive advantage and superior outcome (Penrose, 1959, Barney, 2007).The theory suggests that there can be heterogeneity or firm level differences among firms that allow some of them to sustain competitive advantage. Barney (1991) made it clear that

abnormal rents can be earned from resources to the extent that they are valuable, rare, imperfectly imitable and non substitutable.

DCT is considered an offshoot from RBT and addresses the issue of resource origin that eludes RBT (Crook et al, 2008). It emphasizes resources development and renewal by firms having the ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environment (Teece, 2008). The dynamic capability has extended RBT to the realm of evolving capabilities. When a firm develops its capabilities along path dependent learning it can stay ahead of its imitators and continue to earn superior returns (Dierikx and Cool, 1991, Teece, 1997).

Each organization exercises control over its own resources and capabilities and integrates and utilizes them in unique ways from competitors in order to take advantage of their potential to achieve competitive advantage and superior performance (Grant, 2002 and Penrose, 1995). Mere possession of superior resources does not guarantee attainment of competitive advantage and superior performance, it is how resources are integrated and utilized that translate into superior performance (Johnson et al, 2008, Tuan et al, 2009).They argue further that where organizations in the same industry have similar resources but differing performance levels, the reason could be that they vary to the extent to which they utilize their resources. Others have maintained that organizations should select strategies that enable them best exploit their resource strengths relative to opportunities in the external environment (Prahald and Hamel, 1995, as cited in Johnson

et al, 2008pp.97-99).They added that through strategic stretch, organizations with big ambition and little resources can post greater output through effective management.

Very interesting concepts regarding imitation have emerged from RBT such as isolating mechanisms (Rumelt, 1984), time compression diseconomies, asset mass efficiencies, and casual ambiguities (Dierickx and Cool, 1989). Recently much resource based work has focused on intangible assets which include information (Sampler, 1998), Knowledge (Spender, 1996), and dynamic capabilities (Teece, Pisano and Shuen, 1997).

Many empirical findings support the relationship between resources and performance within the framework of RBT and DCT. Discordant findings however few, have been reported in empirical studies. Galbreath and Calvin (2004) discovered that while RBT largely associates firm performance with intangible resources, the association may not always hold true empirically. But this is explained away by the fact that the strength of some resources may be dependent upon interactions or combinations with other resources and therefore no single resource becomes the most important to firm performance. This problem may be brought about by the unit of analysis (Barney, 2007). Most contributions within the RBT take the individual resource as the relevant unit of analysis to study competitive advantage and performance (Foss, 1998). It ignores the complimentarity and co-specialization nature of resources (Foss, 1998). Most researchers have recognized the role of firm based tangible and intangible resources as sources of competitive advantage and superior performance in organizations.

2.3 Tangible Resources

Resources are the basic primary inputs into organizational processes used to develop products or services of value to customers (Grant, 2005). Penrose (1959) describes resources as the components that constitute the firm. She sees firms as bundles of productive resources whose destiny (decline, survival and success) is determined by the administrative framework (interpreted here as organizational design, general management capability and institutional leadership). Resource therefore is a construct. The implication of Penrose observation is that resources can only be understood through unbundling. Unfortunately, this provides scholars with unrestricted space for plethora of definitions and examples that often lead to confusion. Barney (2007) defines resources as all assets, capabilities, competencies, organizational processes, firm attributes and knowledge among others that are controlled and used by an organization to conceive and implement strategies that enhance efficiency and effectiveness in a competitive environment.

According to Pearce and Robinson(2010) resources are organizational assets that form the basic building blocks for organizational performance, that include physical assets such as plant, equipment, location, human assets in terms of number of people, skills and experience and organizational assets that include culture and reputation. Resources can be categorized into tangible(physical and financial) and intangible human and organizational(Grant, 2005).Tangible resources can easily be imitated by the competition and according to Barney(2007) can only lead to competitive parity(average performance) at threshold level or temporary advantage at superior level. For a physical resource to be strategic it should be able to create competitive advantage, it must have the potential or

capacity to create services. Physical resources vary widely across organizations in terms of quality, quantity and how they are utilized and therefore may explain performance differentials among firms. Still it remains uncertain which physical resources are critical to performance and the extent to which possession of substantial amount of physical resources can translate into superior performance.

Financial resources are the monetary resources an organization controls and include loans, grants, cash balances, debtors, retained earnings, internal financial generating projects and others. Twan et al (2009) observes that financial resources are in most cases limited, expensive, difficult to acquire and manage. Access to reliable sources of funding and ability to generate acceptable returns on invested money will determine ability of an organization to attract more funding from its stakeholders (Barney, 2007). Johnson et al (2008) noted that finance and the manner in which it is managed can be a key determinant of strategic success in organizations. The main issue is to deliver services to the stakeholders that matches or out matches the level of investment. It still remains uncertain however whether substantial amount of financial resources can translate into superior performance.

2.4 Organizational Performance

Firm performance is conceptualized by comparing the willingness of a firm's customers to pay and a firms cost of developing and selling its products or services (Barney, 2007).This difference is known as economic value. Firms that create more economic value than competitors gain competitive advantage and better performance. Those that

create the same economic value are said to be at competitive parity. It is the actual result measured against intended goals and objectives.

Organizational performance is an outcome achieved when an organization successfully formulates and implements a value creating strategy which enable customers receive a service or product of value greater than what they are willing to pay for (Barney, 2007).Stakeholders view value creation in terms of more returns compared with an alternative investment of similar risk, the benefit of forgoing an alternative investment of similar risk (Barney, 1991). Superior performance is achieved when the actual outcome achieved exceeds what is expected based on resources invested for the same purpose. This means that the actual value created is greater than expected value, and that it could be a sign of well managed resources.

According to Dessler (2008, as cited in Adero, 2012, pp.16), Performance is a collection of work activities, operational efficiencies, effectiveness, their measurements and subsequent outcome attained. Most studies in organizational performance have used both financial and non financial indicators that include profit, turnover, return on investment, return on capital employed, inventory turnover(Porter, 1985).Benchmarking is a performance tool used to determine how an organization compares with the competition in the same industry(Johnson et al, 2008).Benchmarking involves comparing own performance against industry best practices in terms of quality, operational efficiency and effectiveness, time and cost in order to learn how to do things better ,faster and cheaper(Adero, 2012).

A trend has emerged whereby the use of balanced scorecard (Kaplan and Norton, 2001) is increasing as a contemporary method in measuring performance. The balanced scorecard analyses both financial and non financial outcomes. It tries to accommodate diverse stakeholder interests and relate performance with strategic objectives. It uses financial measurements that reveal the results of actions already taken and complements this with operational measures such as customer satisfaction, internal process effectiveness and ability to learn and improve the activities that drive future financial outcome. The business process dimension enable managers to evaluate how well the business is running and whether its day to day activities including tasks performed by the workforce support its strategic objectives, based on their mission and vision.

According to Kaplan et al (1992), measuring organizational performance against the needs of its customers can be a pointer towards future performance excellence. As such organizations that are able to derive the best results from this area are likely to achieve future financial benefits and stay ahead of competition, while failure in this area would lead to financial decline. The balanced scorecard not only links performance to short term outcome but also the way in which processes are managed, involving innovation and learning which are perceived to be crucial to long term success. Organizations that achieve continuous success are those that evaluate their performance with respect to formulated goals that match their resource strength, using performance indicators that suit their context (Adero, 2012).Many scholars contend that organizational performance is closely related to amount and quality of tangible and intangible resources within its command.

2.5 Tangible Resources and Organizational Performance

Most scholars believe that profit differentials among firms in the same industry can be explained in terms of their resource heterogeneity. The acquisition and development of superior organization resources is the most important reason that some organizations are more successful than others (Wernerfelt, 1984; Corner, 1991). Johnson et al (2008) observed that varying levels of performances in organizations can be explained by differences in amount and quality of resources they possess and the extent to which they use the resources to generate value to customers. Differences in resource endowment may form the basis for superior outcome in organizations but this is not an adequate reason since not all resources owned by organizations are strategically relevant to performance (Peteraf, 1993; Barney 2007).

Barney (2007) states that for a resource to lead to superior performance, it must be valuable to customers, rare, difficult to access, inimitable and non- substitutable for advantage to last. Organizations that stay ahead of others are those that are able to identify specific resources that are critical to strategic goals, acquire or develop and maintain them to generate more value than competitors.

According to Newbert (2007), resource heterogeneity, organizing level, and dynamic capabilities are important in explaining organizational performance. Resource heterogeneity proposes that differences in specific resources and capabilities possessed by organizations can have the greatest impact on performance. Organizing approach indicates that firm level conditions that enhance effective exploitation of resources and

capabilities would be more important in generating sustainable competitive advantage. Barney (1991, 2007) argued that attributes of advantage creating resources such as value, rareness, inimitability and non substitutability can be used to explain organizations performance.

From the dynamic capability school of thought, resources strengths need to be improved continually to sustain competition; this is to avoid instances where organizational routines could become core rigidities in the ever changing business environment (Grant, 2005). Organizations that stay ahead of the pack must be able to identify specific resources that are relevant to strategic objectives, acquire or develop and effectively utilize them to meet the needs of the customers better than their rival.

Most RBT empirical literature observe that though both tangible and intangible resources contribute and are important for firm performance, it is the intangible resource that could be the main reason for sustained competitive advantage because competitors cannot easily replicate their use (Lui et al, 2010). Newbert (2007) observes that in most RBT studies, the level of empirical support for the theory varies considerably with the independent variable. Where independent variable is operationalized as a specific resource, empirical support is found in only 37% of tests done as opposed to where independent variable is operationalzed as value in which empirical support is found in all.

According to Newbert (2007), four methodological approaches grounded on RBT are used to test the relationship between independent and dependent variables. These

approaches are the resource heterogeneity, the organizing level, the conceptual level and the dynamic capability.

Scholars employing resource heterogeneity approach argue on theoretical grounds that a given resource, capability, or competence is valuable, rare, inimitable, and/or non-substitutable, quantify the amount of it possessed by a firm, and correlate this amount to some measure of performance.

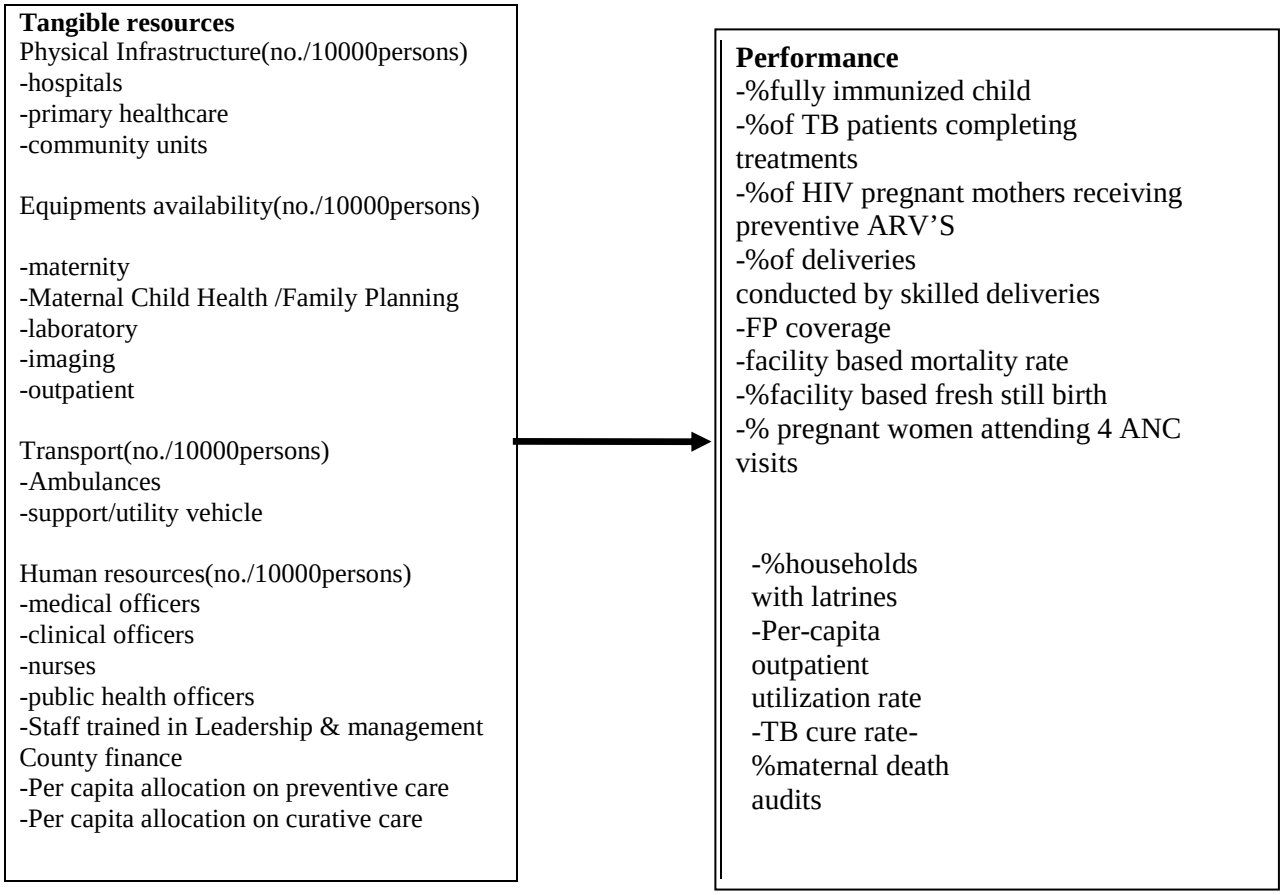
Organizing approach seek to identify those firm level conditions that enable the effective exploitation of the resources and capabilities under examination. They then test the effect of the interaction between a firm's resource and its organizing context (independent variable) on its performance (dependent variable).

Conceptual-level approach seeks to test whether the attributes prescribed by Barney (2007) as essential for a resource to effectively contribute to a firm's advantage are indeed significant predictors to this end. The proposition is that a firm's performance is a function of how well managers build their firms around resources that are valuable, rare, inimitable, and lack substitutes and then proceed to test for example the effect of a given isolating mechanism (a firm's competencies) on its performance.

The dynamic capability approach tests the degree to which specific resource-level processes improve a firm's competitive position by operationalizing the independent variable as the interaction of a specific resource and a specific dynamic capability and

testing its relationship with some measure of performance. Majority of studies employ only one of the approaches (Newbert, 2007).

Figure 1 Conceptual framework



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research design used to achieve objectives of the study outlined in chapter one. It covers research design, population, sampling procedure, data collection method, and data analysis procedures used.

3.2 Research Design

The study used cross sectional, descriptive and correlation designs. Each design provided the research with a different form and type of output. Cross sectional design ensured that information was gathered at one point in time. The descriptive design was employed to present facts as they existed (Kombo and Tromp, 2006) and correlation studies undertaken to enable the researcher assess the degree of relationship that existed between health indicators (dependent variable) and resources (independent variable). Those designs were considered appropriate to enable the researcher achieve high level of reliability (Kothari, 1997) in response to the research problem and objectives.

The resource heterogeneity approach (Newbert, 2007),an RBT research approach adopted from literature review, was the methodology of choice since the study sought to test the relationship between specific resource quantity possessed by county health services and performance using correlation and regression techniques.

3.3 Population of Study

The population of the study were the 47 county health services departments of the 47 county governments in Kenya as created by the constitution of Kenya (2010). All the 47 counties were included in the study, a census study, due to the small population size thus making it possible to get all the information needed more so from the readily available secondary data from the ministry of health.

List of counties was obtained from the constitution of Kenya (2010) document. Each county in the population had a standard document summarizing the levels of current tangible resources (Appendix 1).

3.4 Data Collection

The study used secondary data from the results of exploratory research earlier conducted using ministry of health records (SARAM and Kenya health at a glance, 2013) in relation to tangible resources and performance of county health services. Each of the 47 counties had exploratory research summary findings on the quantity of current tangible resources and average county performance.

Tangible resource information collected includes the levels of health facilities in terms of categories and capacities, equipment capacities in various service areas, transport capacities and human resource capacities for key health personnel. Information on performance collected included performance indicator achievements in areas of fully immunized child, TB completion, preventive ARV for HIV pregnant mothers, skilled

deliveries, family planning coverage, mortality in facilities, fresh still births, ante-natal attendance, latrine coverage, outpatient utilization, TB cure rate and maternal audits.

3.5 Data Analysis

Quantitative data on tangible resources was analyzed through descriptive statistics such as means, percentages and mean variation, standard deviation and frequencies. The relationship between independent (resources) and dependent (performance) variables was established using correlation and regression approaches. Correlations were considered significant at ($p = 0.05$). Multiple linear regression analysis was carried for each performance indicator on all the eleven predictors (independent variable).

Regression model took the form of: $Y=a + b_1x_1 + b_2x_2 \ldots\ldots b_{11}x_{11,}$ where Y represented various performance indicator achievements (dependent variable), x represented tangible resources (independent variable), a represented constant and b the coefficients of various resources. The regression outputs of concern included the significance (p values) of the whole model to determine its predictive value. Coefficient (b) of each resource (independent variable) in the model determined what changes in the performance resulted in additional unit of resource. The model provided the level of significance for each resource coefficient and any resource with $p > 0.05$ was ignored. The Model correlation values (r) indicated the degree and direction of relationship between the resources and performance while the coefficient of determination (r^2) evaluated the extent to which resources in the regression model accounted for the performance.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter contains results obtained from analysis of various resources, performance and resources and performance as measured across health indicators. The data is analyzed from 47 counties. A discussion of the findings follows the analysis. Tables and figures from SPSS outputs are used to provide reference.

4.2 Tangible Resources at County Health Services

Tangible resources owned by the county health services have been classified as physical infrastructure, equipments, transport, human resources and financial resources. Table 4.1 summarizes the nature of resources and quantification units:

Table 4.1: Tangible Resource at County Health Service

Resource type	**Measured in Number/10000persons**
Physical infrastructure	Hospitals (HOSP), Primary health care facilities (PCF), community units (CU).
Medical Equipments	Maternity(EMAT) ; MCH/FP(EMFPU), Laboratory(LAB), Imaging(IMA), outpatient(OUTP)
Transport	Ambulances(TAMB), Support/Utility vehicles(TSV)
Human resources	Doctors(MO), Clinical officers(RCO), ,Public health officers(PHO),Nurses(KRCHN), Staff trained in leadership and management(tmgt)
Financial Resources	Per capita allocation on preventive care(BSP), capita allocation on curative care(BSC)

The resources disparities across counties are indicated in the table 4.2 below. The variables of the study were entered in a sequence starting with dependent variables and followed with the independent variables. The variables were defined on the SPSS data Editor. The data was entered in the data view section with the variables entered in the

columns and the counties (cases) taking the rows. The outputs for this table were found by using the following procedure: from the data view section: → Analyze→descriptive statistics→descriptive→ enter the tangible resource variables in the descriptive box and click OK. The table below was the output of the above procedure.

Table 4.2: Descriptive Statistics (Tangible Resources)

	N	Minimum	Maximum	Mean	Std. Deviation
Mo	47	.04	2.85	.5483	.56405
Tmgt	47	0.00	5.90	1.6511	1.78872
Rco	47	.09	4.72	1.2113	.79692
Krchn	47	1.30	11.52	3.6189	2.19174
Pho	47	.06	1.26	.3774	.29276
Hosp	47	0.00	1.87	.2466	.39631
Pcf	47	1.00	5.00	1.7234	.82626
Cu	47	0.00	1.67	.4483	.38304
Emat	47	6.00	32.00	18.9574	6.89347
Emcfpu	47	13.00	42.00	29.3617	7.55394
Lab	47	1.00	17.00	5.5957	3.43042
Ima	47	6.00	64.00	33.7021	13.13461
Outp	47	8.00	70.00	29.2340	13.21431
Tamb	47	0.00	.50	.1340	.10483
Tsv	47	0.00	1.30	.3128	.24901
Bsp	47	256.00	1456.00	730.1915	245.77717
Bsc	47	132.00	1212.00	438.5745	233.51005
Valid N (listwise)	47				

The budget allocations are the most skewed with allocation for preventive services being the most followed by allocation for curative services. Medical personnel resources appear to be more equitably allocated compared to other resources with the doctors, public health officers clinical officers and nurses all recording standard deviations of less than 0.8. Generally there is significant resource heterogeneity across the counties and also across resource type.

4.3 Performance Measurement of County Health Services

The county health services performance have been measured using health indicators that meet the various health objectives as per Kenya health sector policy and strategy document. Table 4.3 below summarizes the health performance measurements.

Table 4.2: Performance Measure of County Health Services

Performance indicator	**Health objective**
%Fully immunized children	Eliminate non communicable diseases
%TB patients completing treatment	Eliminate non communicable diseases
%HIV pregnant mothers on ARV_S	Eliminate non communicable diseases
% of deliveries conducted by skilled personnel	Provide essential service
% of women of reproductive age receiving family planning	Provide essential services
Facility based maternal mortality per 100,000 live births	Provide essential services
% of pregnant women attending 4 ANC	Provide essential services
% of households with latrines	Collaboration with stakeholders
Per capita outpatient Utilization rate	Improved access
TB Cure rate	Improved quality
Maternal audits	

Table 4.4 below presents the analysis of performances of 47 counties health departments against the national averages for the performance indicators used in this study. Several counties performed poorly in maternal death audits, on putting HIV positive pregnant mothers on anti-retroviral drugs and in the deliveries conducted by skilled personnel. Only in 5 out of 11 performance areas did more than half of the counties record above average performance.

Table 3.4: Performance of each County against National Average

Performance Indicator (independent Variables)	**%> average**	**% < average**
Maternal deaths Audit madr	11	89
TB Cure rate tbcr	62	38
Per Capita Outpatient Utilization pcou	49	51
Households with Latrines hswt	34	66
Pregnant Women (4ANC Visits) pwanc	51	49
Facility based Maternal mortality fbmm	51	49
Women on Family Planning wrfp	49	51
Deliveries conducted with Skilled personnel dcsa	30	70
HIV Pregnant mothers on ARV_S hivpm	28	72
TB Patients tbp	57	43
Fully Immunized children(fic)	55	45

There are significant performance differentials across counties in almost all the performance indicators. This is clearly captured in the table 5 with the high disparities noted in households with latrines; facility based maternal mortality and maternal audits and deaths. These disparities are demonstrated by high standard deviation as shown in table 5 below.

The variables of the study were entered in a sequence starting with dependent variables and followed with the independent variables. The variables were defined on the SPSS data Editor. The data was entered in the data view section with the variables entered in the columns and the counties (cases) taking the rows. The outputs for this table were found by using the following procedure: from the data view section: → Analyze→descriptive statistics→descriptive→ enter the performance indicator variables in the descriptive box and click OK. The table below was the output of the above procedure.

Table 4.4: Descriptive Statistics (Performance Indicators)

	N	**Minimum**	**Maximum**	**Mean**	**Std. Dev.**
Fic	47	41.90	103.60	74.9638	14.50788
Tbp	47	72.00	95.00	87.6383	4.48876
Hivpm	47	40.00	138.50	83.8000	21.93018
Dcsa	47	15.80	96.20	38.5021	18.66475
Wrfp	47	3.00	97.70	39.7957	19.43377
Fbmm	47	0.00	436.00	171.3021	100.37170
Pwanc	47	14.00	94.10	46.6468	13.92743
Hswt	47	0.00	1791.00	123.4426	276.50992
Pcou	47	.20	3.50	1.0447	.50726
Tbcr	47	38.00	98.00	80.8872	9.08665
Madr	47	0.00	460.00	45.8596	90.11654
Valid N (listwise)	47				

4.4 Tangible Resources and Performance of County Health Services

The relationship between tangible resources (independent variables in the study) and performance (dependent variable in the study) is established using correlation and regression analysses.The correlation coefficients (r) determines the degree and direction of the relationships between each performance indicator and each tangible resource. Regresion analysis provides the model equation for predicting the performance from a given set of resource inputs.Each performance indicator is regressed on all tangible resources and the coefficient of determination (r^2) values are used to provide explaination for variations in performance as explained by the tangible resource inputs.

The tables on correlations are presented along side regression for each performance and captures correlation coefficients between resource inputs and various health indicators used in the study. The significant correlations are indicated by asterics (*) with single asterics showing significance at 0.05 and double asterics indicating significant correlations at 0.01.The negative correlations indicates an inverse relationship between the resource and the performance indicator. Of all the resources available for immunisation of children, the most strategic tangible resource is equipments for maternal and child clinics. It is intersting that public health officers (PHO) is negatively contributing to treatments completion rate among tuberculosis patients. Maternity, maternal and child and Laboratory equipments are strategic tangible resources in the provision of ARV_S to HIV positive mothers.

Equipment for maternal and child clinics correlates strongly with performance in skilled deliveries while family planning coverage is influenced strongly by the number of doctors, primary health care facilities and maternal and child equipments. In facility based maternal mortality performance a negative relationship is observed. The more the community units and equipment for maternal and child clinics the less the maternal deaths.

Performance in 4 ANC visits by pregnant mothers depends on the number of hospitals and funding although the correlations are only significant at 0.05. Households with latrines are strongly related to community units. It is however,confounding that there is a strong relationship between household with latrines with equipments in maternity and maternal and child health. Per capita outpatient utilisation is found to be strongly related to the number of primary health care facilities and tuberculosis cure rate is strangely having a negative relationship with public health officers. These findings are further expounded on subsequently with regression analysis to assist in explanation and interpretation.

4.4.1 Tangible Resources and Fully Immunized Child

Tangible resources were regressed on the Fully immunized child to ascertain their influence. The outputs of these regressions and correlation are presented in tables 4.7a-c(regressions) and 4.6(correlations). As can be seen each of the resources is correlated with the creterion(FIC), but only maternal and child health equipments(emcfpu) is possitively and significantly($p<0.05$) correllated with the criterion.

The multiple regression model with all the eleven predictors produced R^2=40.4 and p > 0.05. These resources can only explain 40.4% (r^2) of changes in the performance. The remaining 59.5 % can be explained by other factors including intangible resources and possibly social determinants for health. But with higher p values, it means that the model is not reliable for predictive purposes.

Table on coefficients provides a detailed summary of each resource contribution to performance. The most important finding is the importance (significance = 0.009) of maternal and child equipments to the model. However, 1 per 10000 persons(1 unit) maternal child equipment can potentially only realize 0.721 change in performance in fully immunized child. The more available these equipments are in the counties the better the performance. Investing in maternal and child equipments(emcfpu) increases access to child immunization more than investing in any other resource that is evidently not contributing to this model due to the high p values.

Table 4.6: Correlation of fully immunized child with resources

		Mo	tmgt	Rco	krchn	pho	hosp	pcf	cu	emat	emcfpu	lab	ima	outp	tamb	tsv	bsp	bsc
fic	Pearson Correlation	.195	.187	.087	.125	.055	.120	.177	.157	.206	.453**	.166	.128	.043	.180	.122	.262	.245
	Sig. (2-tailed)	.190	.208	.561	.401	.711	.421	.235	.293	.166	.001	.263	.390	.776	.227	.414	.076	.097
	N	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47

Table 4.7a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.636[a]	.404	.055	14.10421

Table 4.7b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3913.077	17	230.181	1.157	.354[b]
	Residual	5768.932	29	198.929		
	Total	9682.009	46			

Dependent Variable: fic

Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 4.7c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	38.983	14.625		2.665	.012
	Mo	13.684	9.662	.532	1.416	.167
	Tmgt	-.618	1.527	-.076	-.405	.689
	Rco	-6.798	7.021	-.373	-.968	.341
	krchn	-2.414	2.467	-.365	-.979	.336
	Pho	10.640	11.787	.215	.903	.374
	Hosp	-4.476	8.449	-.122	-.530	.600
	Pcf	4.097	4.303	.233	.952	.349
	Cu	3.182	8.670	.084	.367	.716
	Emat	-.396	.614	-.188	-.644	.524
	emcfpu	1.385	.493	.721	2.808	.009
	Lab	.402	.966	.095	.417	.680
	Ima	.066	.216	.060	.304	.763
	Outp	-.157	.220	-.143	-.716	.479
	Tamb	36.368	32.091	.263	1.133	.266
	Tsv	-2.810	13.689	-.048	-.205	.839
	Bsp	.007	.015	.126	.500	.621
	Bsc	-.017	.017	-.270	-.964	.343

a. Dependent Variable: fic

4.4.2 Tangible Resources and TB Patients completing treatments

Tangible resources were regressed on the TB patients completing treaments to ascertain their influence. The outputs of these regression and correlations are presented in tables 4.9a-c and 4.8 respectively. As can be seen each of the resource is correlated with the creterion(tbp), but only Public health officers(pho) is negatively and significantly (-0.307, $p<0.05$) correllated with the criterion. This is rather suprising as this relationship is expected to be positive.

The multiple regression model with all the eleven predictors produced R^2=30.6 and $p > 0.05$. These resources can only explain 30.6 (r^2) of changes in the performance. The remaining 69.4% can be explained by other factors including intangible resources and possibly social determinants for health. But with higher p values, it means that the model is not reliable for predictive purposes.

Table on coefficients provides a detailed summary of each resource contribution to the model. Here Pho is rejected ($p>0.05$) and the only accepted resources (bsc and tamb) are suppressor predictors with no significant correlations.

Table 4.8: Correlation TB patients completing treatment and resources

		Mo	tmgt	rco	krchn	pho	hosp	pcf	cu	emat	emcfpu	lab	ima	outp	tamb	tsv	bsp	bsc
tbp	Pear-son Correlation	-183	.048	-216	-143	-307*	-158	-262	.138	-005	-.080	.112	.098	-118	-241	-.264	-197	-.198
	Sig. (2-tailed)	.219	.749	.145	.337	.036	.289	.075	.355	.975	.593	.455	.514	.429	.102	.073	.185	.182
	N	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47

Table 4.9a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.554[a]	.306	-.100	4.70817

Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 4.9b:ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	284.011	17	16.707	.754	.726[b]
Residual	642.840	29	22.167		
Total	926.851	46			

Dependent Variable: tbp Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 4.9c: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	89.595	4.882		18.352	.000
mo	-1.802	3.225	-.226	-.559	.581
tmgt	.244	.510	.097	.479	.635
rco	-2.297	2.344	-.408	-.980	.335
krchn	1.495	.824	.730	1.815	.080
pho	-3.051	3.935	-.199	-.776	.444
hosp	-.631	2.820	-.056	-.224	.824
pcf	-.765	1.436	-.141	-.533	.598
cu	1.610	2.894	.137	.556	.582
emat	.109	.205	.167	.531	.600
emcfpu	-.119	.165	-.201	-.724	.475
lab	-.179	.323	-.137	-.554	.584
ima	.142	.072	.415	1.964	.059
outp	-.066	.073	-.196	-.907	.372
tamb	-1.262	10.712	-.029	-.118	.907
tsv	-5.174	4.569	-.287	-1.132	.267
bsp	-.002	.005	-.102	-.377	.709
bsc	.002	.006	.078	.258	.798

4.4.3 Tangible Resources and % of HIV Pregnant Mothers Receiving ARV_S

Tangible resources were regressed on the percentage of HIV pregnant mothers receiving ARV_S to ascertain their influence. The outputs of these regression and correlations are presented in tables 5.1a-c and 5.0. As can be seen each of the resources is correlated with the creterion(hivpm). Maternal and child health equipments(emcfpu), Maternity equipments(emat) and laboratory equipments are positively and significantly($p<0.05$) correllated with the criterion. Maternity, maternal and child and Laboratory equipments are strategic tangible resources in the provision of ARV_S to HIV positive mothers. Counties that perform better in this indicator are those with superior numbers of the respective equipments.

The multiple regression model with all the eleven predictors produced R^2=55.6% and $p < 0.05$. These resources can only explain 55.6% (r^2) of changes in the performance. The remaining 44.4 % can be explained by other factors including intangible resources and possibly social determinants for health. But with lower p(0.036) values, it means that the model is reliable for predictive purposes.

Table on coefficients provides a detailed summary of each resource contribution to performance. The most important finding is the importance (significance,$p = 0.018$) of only maternal and child equipments to the model. However, 1 per 10000 persons(1 unit) maternal child equipment can potentially realize 1.61 change in performance indicator.

The more available these equipments are in the counties the better the performance. Investing in maternal and child equipments(emcfpu) increases access to ARV for HIV pregnant mothers and preventing maternal to child transmission.

Table 5.0 :Correlation HIV Pregnant Mothers Receiving ARVs and Resources

		Mo	tmgt	Rco	krchn	pho	hosp	pcf	cu	emat	emcfpu	lab	ima	outp	tamb	tsv	Bsp	osc
hivpm	Pear-son Correlation	-.135	.224	-.179	-.239	-.152	.029	-.015	.271	.424**	.461**	.456**	.193	.164	-.092	-.011	.029	.175
	Sig. (2-tailed)	.364	.130	.229	.106	.306	.847	.918	.065	.003	.001	.001	.193	.271	.539	.941	.847	.241
	N	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47

Table 5.1a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.746[a]	.556	.296	18.39541

a. Predictors:(Constant),bsc,cu,outp,tmgt,pho,hosp,tsv,rco,ima,emat,tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 5.1b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12309.555	17	724.091	2.140	.035[b]
	Residual	9813.345	29	338.391		
	Total	22122.900	46			

a. Dependent Variable: hivpm b. Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 5.1c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	22.641	19.075		1.187	.245
	Mo	.428	12.601	.011	.034	.973
	Tmgt	3.654	1.992	.298	1.835	.077
	Rco	-7.082	9.157	-.257	-.773	.446
	Krchn	-3.413	3.218	-.341	-1.061	.298
	pho	10.467	15.373	.140	.681	.501
	hosp	-9.733	11.020	-.176	-.883	.384
	pcf	6.597	5.612	.249	1.176	.249
	cu	5.475	11.307	.096	.484	.632
	emat	-.593	.801	-.186	-.740	.465
	emcfpu	1.610	.643	.555	2.504	.018
	lab	1.990	1.260	.311	1.579	.125
	ima	.248	.282	.148	.878	.387
	outp	-.023	.287	-.014	-.080	.937
	tamb	40.962	41.854	.196	.979	.336
	tsv	-4.554	17.854	-.052	-.255	.800
	bsp	-.012	.019	-.136	-.628	.535
	bsc	.024	.023	.253	1.043	.306

Dependent Variable: hivpm

4.4.4 Tangible Resources and Deliveries Conducted by Skilled Personnel

Tangible resources were regressed on the percentage deliveries conducted by skilled personel to ascertain their influence. The outputs of these regression and correlations are presented in tables 5.3a-c and 5.2 repectively. As can be seen each of the resources is correlated with the creterion(dcsa). Only Maternal and child health equipments(emcfpu) is positively and significantly($p<0.05$) correllated with the criterion. Maternity, maternal

and child equipments are strategic tangible resources in having mothers deliver through skilled hands. Counties that perform better in this indicator are those with superior numbers of the equipments.

The multiple regression model with all the eleven predictors produced R^2=% and p > 0.05. These resources can only explain 46.4% (r^2) of changes in the performance. The remaining 53.6 % can be explained by other factors including intangible resources and possibly social determinants for health. But with higher p(0.173) values, it means that the model is unreliable for predictive purposes.

Table on coefficients provides a detailed summary of each resource contribution to the model. The most important finding is the importance (significance, p = 0.039) of only maternal and child equipments to the model. However, 1 per 10000 persons(1 unit) maternal child equipment can potentially realize 1.3% change in performance indicator. The more available these equipments are in the counties the better the performance. Investing in maternal and child equipments(emcfpu) increases access skilled deliveries.

Table 5.2: Correlations Deliveries attended by Skilled Workers

		mo	tmgt	rco	krchn	bho	hosp	bcf	cu	emat	emcfpu	ab	ma	butp	tamb	tsv	Bsp	bsc
dcsa	Pear-son Correlation	.204	-.161	.250	.102	-.115	.069	.091	.189	.284	.445**	.210	-.061	-.133	-.066	-.173	-.075	.010
	Sig. (2-tailed)	.170	.278	.090	.495	.441	.645	.544	.204	.053	.002	.157	.684	.371	.661	.246	.616	.948
	N	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47

Table 5.3a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.681[a]	.464	.150	17.21183

Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 5.3b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7433.985	17	437.293	1.476	.173[b]
	Residual	8591.165	29	296.247		
	Total	16025.150	46			

Dependent Variable: dcsa

Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 5.3c: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	8.802	17.847		.493	.626
mo	7.471	11.791	.226	.634	.531
tmgt	-2.884	1.864	-.276	-1.548	.133
rco	3.857	8.568	.165	.450	.656
krchn	-2.057	3.011	-.242	-.683	.500
pho	-10.384	14.384	-.163	-.722	.476
hosp	5.498	10.311	.117	.533	.598
pcf	9.671	5.251	.428	1.842	.076
cu	-10.759	10.580	-.221	-1.017	.318
emat	.192	.749	.071	.256	.800
emcfpu	1.304	.602	.528	2.167	.039
lab	.734	1.179	.135	.622	.539
ima	-.211	.264	-.148	-.798	.432
outp	-.031	.268	-.022	-.114	.910
tamb	2.470	39.161	.014	.063	.950
tsv	-23.830	16.705	-.318	-1.427	.164
bsp	.012	.018	.159	.666	.511
bsc	-.036	.021	-.453	-1.703	.099

a. Dependent Variable: dcsa

4.4.5 Tangible Resources and Women of Reproductive Age Receiving Family Planning

Tangible resources were regressed on the women of reproductive age receiving family planning to ascertain their influence. The outputs of these regression and correlations are

presented in tables 5.5a-c and 5.4 respectively. As can be seen each of the resources is correlated with the creterion(wrfp). Maternal and child health equipments(emcfpu) and per capita allocation on curative services are positively and significantly($p<0.05$) correllated with the criterion. Superiority of these resources resulted in superior performance for those counties.

The multiple regression model with all the eleven predictors produced R^2=54.7% and $p < 0.05$. These resources can only explain 54.7% (r^2) of changes in the performance. The remaining 45.3 % can be explained by other factors including intangible resources and possibly social determinants for health. With lower p(0.042) values, it means that the model is reliable for predictive purposes.

Table on coefficients provides a detailed summary of each resource contribution to the model. The most important finding is the importance of maternal and child equipments and primary care facilities($P<0.01$) to the model. An additional 1 per 10000 persons(1 unit) maternal child equipment can potentially realize 1.624% change in performance indicator while one unit change in primary care units results in 14.37 % change in access to family planing. The more available these resources are in the counties the better the performance indicator.

Table 5.4: Correlations Women of Reproductive Age receiving Family Planning and Resources

		mo	tmgt	rco	Krchn	pho	nosp	pcf	cu	emat	emcfpu	ab	ma	outp	tamb	tsv	Bsp	psc
wrfp	P Correlation	.321*	-.193	.193	.233	-.003	.017	.396**	.186	.248	.484**	.206	.180	.126	.092	.125	.181	.323*
	Sig. (2-tailed)	.028	.194	.194	.114	.983	.912	.006	.212	.092	.001	.166	.227	.397	.541	.401	.222	.027
	N	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47

Table 5.5a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.739[a]	.547	.281	16.47894

a. Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 5.5b: ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	9497.775	17	558.693	2.057	.042[b]
Residual	7875.104	29	271.555		
Total	17372.879	46			

a. Dependent Variable: wrfp

Table5.5c: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-15.973	17.087		-.935	.358
mo	16.317	11.288	.474	1.445	.159
tmgt	-.807	1.784	-.074	-.452	.655
rco	-9.964	8.203	-.409	-1.215	.234
krchn	-1.855	2.882	-.209	-.644	.525
pho	2.882	13.772	.043	.209	.836
hosp	-7.945	9.872	-.162	-.805	.428
pcf	14.370	5.027	.611	2.859	.008
cu	3.492	10.129	.069	.345	.733
emat	-.021	.717	-.007	-.029	.977
emcfpu	1.624	.576	.631	2.819	.009
lab	.076	1.129	.013	.068	.946
ima	.097	.253	.066	.384	.703
outp	-.079	.257	-.054	-.309	.759
tamb	20.028	37.494	.108	.534	.597
tsv	-14.645	15.994	-.188	-.916	.367
bsp	-.001	.017	-.016	-.071	.944
bsc	-.010	.020	-.121	-.493	.625

b. Predictors: (Constant), bsc,cu,outp,tmgt pho,hosp,tsv,rco ima,emat tamb,lab,pcf,bsp, emcfpu krchn,mo
Dependent Variable: wrfp

4.4.6 Tangible Resources and Facility Based Maternal Mortality

Tangible resources were regressed on the facility based maternal mortality to ascertain their influence. The outputs of these regression and correlations are presented in tables

5.7a-c and 5.6 respectively. As can be seen each of the resources is correlated with the creterion(fbmm). There is an inverse and significant(p ,0.05) correlation between the criterion(fbmm) with community units(cu) and maternal and child equipments.. Superiority of these resources resulted in fewer deaths.

The multiple regression model with all the eleven predictors produced R^2=54.1% and p < 0.05. These resources can only explain 54.1% (r^2) of changes in the performance. The remaining 45.9 % can be explained by other factors including intangible resources and possibly social determinants for health. With lower p(0.048) values, it means that the model is reliable for predictive purposes. Community units and maternal and child equipmpments are not however predictors of the model.It is the utility vihicles and the Rco which do not correlate significantly with the criterion that are good predictors.

Table on coefficients provides a detailed summary of each resource contribution to the model.For each additional 1:10000 clinical officers there is significant change in facility based maternal deaths. Similarly, for each unit change in utility vicle to population ratio their may be 205% reduction in in the deaths, when the other variables are held constant.

Table 5.6: Correlations Facility Based Maternal Mortality and Resources

		no	mgt	rco	rchn	pho	hosp	pcf	cu	emat	emcfpu	ab	ma	putp	amb	sv	psp	psc
fbmm	P Correlation	.135	-.047	.117	.025	-.089	-.206	-.081	-.318*	-.277	-.354*	-.080	.175	-.067	-.084	.113	-.064	-.197
	Sig. (2-tailed)	.366	.751	.435	.868	.553	.165	.590	.029	.060	.015	.591	.238	.656	.574	.449	.670	.185
	N	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47

Table 5.7a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.735[a]	.541	.271	85.68909

a. Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 5.7b : ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	250490.011	17	14734.707	2.007	.048[b]
	Residual	212935.998	29	7342.621		
	Total	463426.010	46			

a. Dependent Variable: fbmm

b. Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 5.7c: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	313.469	88.853		3.528	.001
mo	-2.517	58.699	-.014	-.043	.966
tmgt	-9.181	9.278	-.164	-.990	.331
rco	117.025	42.655	.929	2.744	.010
krchn	-19.957	14.988	-.436	-1.331	.193
pho	-111.261	71.611	-.325	-1.554	.131
hosp	-41.682	51.333	-.165	-.812	.423
pcf	-50.539	26.140	-.416	-1.933	.063
cu	-48.809	52.672	-.186	-.927	.362
emat	-3.121	3.731	-.214	-.837	.410
emcfpu	-3.560	2.996	-.268	-1.188	.244
lab	2.024	5.871	.069	.345	.733
ima	.692	1.314	.091	.527	.602
outp	.356	1.335	.047	.267	.792
tamb	-241.757	194.964	-.253	-1.240	.225
tsv	205.845	83.165	.511	2.475	.019
bsp	.159	.090	.389	1.760	.089
bsc	-.144	.106	-.335	-1.361	.184

Dependent Variable: fbmm

4.4.7 Tangible Resources and Pregnant Women Attending 4 ANC

Tangible resources were regressed on pregnant women attending 4 ANC to ascertain their influence. The outputs of these regression and correlations are presented in tables 5.9a-c and 5.8 respectively. As can be seen each of the resources is correlated with the creterion. There is a positive and significant($p<0.05$) correlation between concentration of hospitals, funds for both preventive and curative services percentage of women completing 4 antenatal care visits. But the p values for the model is higher making prediction unreliable

The multiple regression model with all the eleven predictors produced R^2=37.6% and $p > 0.05$. These resources can only explain 37.6% (r^2) of changes in the performance. The remaining 62.4 % can be explained by other factors including intangible resources and possibly social determinants for health. With higher p(0.048) values, it means that the model is unreliable for predictive purposes.

Table 5.8: Correlations 4 ANC Attendants and Resources

		mo	tmgt	rco	krchn	pho	hosp	pcf	cu	emat	emcfpu	lab	ima	outp	tamb	tsv	bsp	bsc
pwanc	Pear-son Correlation	.197	-.076	.187	.201	.137	.374**	.167	.136	-.018	.257	-.015	.010	-.190	.238	.015	.288*	.352*
	Sig. (2-tailed)	.184	.612	.208	.175	.358	.010	.261	.364	.904	.081	.922	.949	.201	.107	.921	.049	.015
	N	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47

Table 5.9a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.613[a]	.376	.011	13.85390

a. Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu,krchn, mo

Table 5.9b: ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3356.789	17	197.458	1.029	.459[b]
Residual	5565.988	29	191.931		
Total	8922.777	46			

Dependent Variable: pwanc

Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table5.9c: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	30.262	14.365		2.107	.044
mo	3.618	9.490	.147	.381	.706
tmgt	1.000	1.500	.128	.667	.510
rco	-6.989	6.896	-.400	-1.013	.319
krchn	.647	2.423	.102	.267	.791
pho	9.779	11.578	.206	.845	.405
hosp	7.418	8.299	.211	.894	.379
pcf	2.899	4.226	.172	.686	.498
cu	.909	8.516	.025	.107	.916
emat	-.277	.603	-.137	-.459	.650
emcfpu	.626	.484	.340	1.293	.206
lab	.003	.949	.001	.004	.997
ima	.115	.212	.109	.543	.592
outp	-.416	.216	-.395	-1.927	.064
tamb	23.601	31.521	.178	.749	.460
tsv	-16.612	13.446	-.297	-1.235	.227
bsp	3.172E-005	.015	.001	.002	.998
bsc	.012	.017	.194	.674	.506

a. Dependent Variable: pwanc

4.4.8 Tangible Resources and Households with Latrines

Tangible resources were regressed on the households with latrines to ascertain their influence. The outputs of these regression and correlations are presented in tables 6.1a-c and 6.0 respectively. As can be seen each of the resources is correlated with the creterion(hswt). There is a positive and significant($p<0.05$) correlation between community units,maternity equipments and maternal and child equipments and

percentage of households with latrines. While it is clear with community units this relationship can not be directly with the equipments.

The multiple regression model with all the eleven predictors produced R^2=53.4% and p < 0.05. These resources can only explain 53.4% (r^2) of changes in the performance. The remaining 46.6 % can be explained by other factors including intangible resources and possibly social determinants for health. With higher p(0.054) values, it means that the model is reliable for predictive purposes.

Primary care facilities is a significant predictor of the model(P<0.05).It means that for each unit change in the ratio of primary health care facilities to 10000 persons there will be 174% increase in house holdswith latrines.

Table 6.0 :Correlations Households with Latrines and Resources

		mo	tmgt	rco	krchn	pho	hosp	pcf	cu	emat	emcfpu	lab	ima	outp	tamb	tsv	psp	psc
hswt	Pear-son Correlation	-.049	-.122	.097	.109	.022	.067	.234	.462**	.365*	.310*	.123	-.222	-.123	.056	.035	-.019	-.021
	Sig. (2-tailed)	.742	.414	.516	.465	.881	.656	.114	.001	.012	.034	.408	.133	.412	.709	.816	.898	.891
	N	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47

Table 6.1a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.731[a]	.535	.262	237.56962

Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 6.1b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1880315.420	17	110606.789	1.960	.054[b]
	Residual	1636740.435	29	56439.325		
	Total	3517055.855	46			

Dependent Variable: hswt Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 6.1c: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-200.564	246.342		-.814	.422
mo	-80.159	162.741	-.164	-.493	.626
tmgt	-42.398	25.722	-.274	-1.648	.110
rco	-66.243	118.260	-.191	-.560	.580
krchn	21.379	41.555	.169	.514	.611
pho	49.420	198.538	.052	.249	.805
hosp	4.264	142.319	.006	.030	.976
pcf	174.034	72.473	.520	2.401	.023
cu	236.190	146.030	.327	1.617	.117
emat	20.678	10.343	.516	1.999	.055
emcfpu	.654	8.307	.018	.079	.938
lab	-12.087	16.276	-.150	-.743	.464
ima	-1.631	3.644	-.077	-.448	.658
outp	-2.858	3.700	-.137	-.772	.446
tamb	395.499	540.529	.150	.732	.470
tsv	-127.160	230.572	-.115	-.551	.586
bsp	-.201	.250	-.179	-.805	.427
bsc	-.128	.294	-.108	-.434	.667

a. Dependent Variable: hswt

4.4.9 Tangible Resources and Per Capita Outpatient Utilization

Tangible resources were regressed on the percapita outpatient utilization to ascertain their influence. The outputs of these regression and correlations are presented in tables 6.3a-c and 6.2 respectively. As can be seen each of the resources is correlated with the

creterion(pcou). There is a positive and significant($p<0.05$) correlation between primary care facilities and outpatient utilization. Counties with more primary health care facilities to to have more patients.

The multiple regression model with all the eleven predictors produced R^2=47.7% and $p > 0.05$. These resources can only explain 47.7% (r^2) of changes in the performance. The remaining 52.3 % can be explained by other factors including intangible resources and possibly social determinants for health. With higher p(0.14) values, it means that the model is unreliable for predictive purposes.

Table 6.2 : Correlations Out Patient Utilization and Resources

		mo	tmgt	rco	krchn	pho	hosp	pcf	cu	emat	emcfpu	lab	ima	outp	tamb	tsv	bsp	bsc
pcou	Pear-son Correlation	.201	-.270	.073	.137	.043	-.026	.404**	.109	-.017	.246	.061	.091	.056	.138	.106	.214	.252
	Sig.(2-tailed)	.175	.067	.625	.358	.774	.863	.005	.465	.910	.096	.686	.542	.709	.354	.480	.148	.088
	N	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47

Table 6.3a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.691[a]	.477	.170	.46203

Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 6.3b: ANOVA[a]

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	5.645	17	.332	1.556	.143[b]
Residual	6.191	29	.213		
Total	11.836	46			

.Dependent Variable: pcou Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table6.3c: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.315	.479		.657	.516
mo	.525	.317	.584	1.658	.108
tmgt	-.053	.050	-.185	-1.050	.302
rco	-.302	.230	-.474	-1.312	.200
krchn	-.139	.081	-.600	-1.717	.097
pho	.449	.386	.259	1.162	.255
hosp	-.096	.277	-.075	-.347	.731
pcf	.462	.141	.752	3.275	.003
cu	.233	.284	.176	.822	.418
emat	-.032	.020	-.430	-1.573	.126
emcfpu	.043	.016	.644	2.675	.012
lab	.017	.032	.117	.545	.590
ima	.000	.007	-.009	-.050	.961
outp	-.003	.007	-.088	-.471	.641
tamb	.067	1.051	.014	.064	.950
tsv	-.180	.448	-.088	-.401	.691
bsp	1.065E-005	.000	.005	.022	.983
bsc	-.001	.001	-.277	-1.055	.300

4.4.10 Tangible Resources and TB Cure Rate

Tangible resources were regressed on TB cure rate to ascertain their influence. The outputs of these regression and correlations are presented in tables 6.5a-c and 6.4 respectively. As can be seen, each of the resources is correlated with the creterion(pcou). There is a negative and significant($p<0.05$) correlation between cure rate and pho. This is again unexpected and needs to be researched further.

The multiple regression model with all the eleven predictors produced $R^2=33.8\%$ and $p > 0.05$. These resources can only explain 33.8% (r^2) of changes in the performance. The remaining 62.2 % can be explained by other factors including intangible resources and

possibly social determinants for health. With higher p(0.6) values, it means that the model is unreliable for predictive purposes.

Table6.4: Correlations TB Cure Rate and Resources

		mo	tmgt	rco	krchn	pho	hosp	pcf	Cu	emat	emcfpu	ab	ma	outp	tamb	tsv	bsp	Bsc
tbcr	PCorrelation	-.229	.073	-.173	-.132	-.303*	.126	.026	.036	-.082	-.098	.015	.073	-.137	.087	.028	-.161	-.124
	Sig. (2-tailed)	.121	.628	.245	.375	.039	.400	.864	.808	.583	.512	.921	.625	.360	.561	.851	.279	.405
	N	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47

Table 6.5a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.582[a]	.338	-.050	9.30995

Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 6.5b: ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1284.513	17	75.560	.872	.608[b]
Residual	2513.579	29	86.675		
Total	3798.092	46			

Table 6.5c: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	85.027	9.654		8.808	.000
mo	-10.301	6.378	-.639	-1.615	.117
tmgt	-.091	1.008	-.018	-.090	.929
rco	-1.698	4.634	-.149	-.366	.717
krchn	1.759	1.628	.424	1.080	.289
pho	-8.828	7.780	-.284	-1.135	.266
hosp	7.213	5.577	.315	1.293	.206
pcf	3.823	2.840	.348	1.346	.189
cu	-3.188	5.723	-.134	-.557	.582
emat	.100	.405	.076	.247	.807
emcfpu	-.189	.326	-.157	-.579	.567
lab	.238	.638	.090	.374	.711
ima	.201	.143	.291	1.408	.170
outp	-.172	.145	-.250	-1.186	.245
tamb	2.651	21.182	.031	.125	.901
tsv	-3.528	9.036	-.097	-.390	.699
bsp	-.008	.010	-.227	-.858	.398
bsc	.003	.012	.070	.236	.815

Dependent Variable: tbcr

4.4.11 Tangible Resources and Maternal audits/Death audits

Tangible resources were regressed on maternal audits to ascertain their influence. The outputs of these regression and correlations are presented in tables 6.7a-c and 6.6 respectively. As can be seen each of the resources is correlated with the creterion(madr). There is no significant correlation.

The multiple regression model with all the eleven predictors produced R^2=35.4% and p > 0.05. These resources can only explain 35.4% (r^2) of changes in the performance. The remaining 64.6 % can be explained by other factors including intangible resources and possibly social determinants for health. With higher p(0.5) values, it means that the model is unreliable for predictive purposes.

Community units and laboratory($p<0.05$) are the only significant variables for predictive purposes. For each unit change in laboratory equipments there can be 15% change of audits. Similarly one unit change in community units can generate 153% changes in maternal audits.

Table 6.6: Correlations Maternal Death Audits and Resources

		mo	tmgt	rco	krchn	pho	hosp	pcf	cu	emat	emcfpu	ab	ma	outp	tamb	tsv	bsp	bsc
madr	Pear-son Correlation	-.176	.091	-.169	-.136	-.009	-.096	-.049	-.141	.109	-.111	.237	-.136	-.107	-.113	-.026	.015	-.089
	Sig. (2-tailed)	.238	.545	.257	.363	.954	.523	.744	.343	.467	.458	.109	.361	.475	.449	.865	.922	.551
	N	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47

Table 6.7a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.595[a]	.354	-.024	91.19476

Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 6.7b: ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	132387.588	17	7787.505	.936	.545[b]
Residual	241178.025	29	8316.484		
Total	373565.613	46			

Dependent Variable: madr b. Predictors: (Constant), bsc, cu, outp, tmgt, pho, hosp, tsv, rco, ima, emat, tamb, lab, pcf, bsp, emcfpu, krchn, mo

Table 6.7c: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	62.182	94.562		.658	.516
	mo	-90.553	62.471	-.567	-1.450	.158
	tmgt	-7.159	9.874	-.142	-.725	.474
	rco	-2.567	45.396	-.023	-.057	.955
	krchn	13.874	15.951	.337	.870	.392
	pho	-5.184	76.212	-.017	-.068	.946
	hosp	81.556	54.631	.359	1.493	.146
	pcf	31.872	27.820	.292	1.146	.261
	cu	-153.449	56.056	-.652	-2.737	.010
	emat	2.722	3.970	.208	.686	.498
	emcfpu	-2.702	3.189	-.226	-.847	.404
	lab	15.730	6.248	.599	2.518	.018
	ima	-1.218	1.399	-.178	-.871	.391
	outp	-.506	1.420	-.074	-.356	.724
	tamb	-254.920	207.490	-.297	-1.229	.229
	tsv	-35.152	88.509	-.097	-.397	.694
	bsp	.062	.096	.170	.648	.522
	bsc	-.025	.113	-.065	-.221	.826

Dependent Variable: madr

4.5 Discussion of Findings

It is noted from the findings that there exists inequitable distribution of tangible health resources across counties in Kenya. The notable disparities are found in the financial resources and equipments. This inequality may be responsible for the county performance differentials.

It is not unusual for organizations to have differences in resource levels in terms of quantity and quality and this has been observed in the literature as a cornerstone of the resource based theory (RBV). The resource heterogeneity factor or firm level difference is one of the views used to explain performance differences among firms in the same industry. This study is in agreement with the three central tenets of the RBT logic. First, it confirms that resource heterogeneity can be used to explain performance differentials. Secondly this study found that only specific resources were responsible for superior performance. It was these particular strategic resources that set counties apart in terms of performance. Thirdly the RBT framework was successfully used to identify resources most useful to performance. For social service organizations such as health, resource deployment should not be left to market forces or political expediency. Indeed in the WHO framework equity is recognized as a vehicle to achieving the health goals (Maynard & Bloor, 1995).

The findings also revealed Performance differences among counties. This is consistent with the resource disparities observed earlier and is a pointer that resources do influence performance. Wide performance disparities were mainly observed in TB cure rate, households with latrines, facility based maternal mortality and maternal audits all of which draw significant part of their financial resources from preventive services allocation.

Correlation analysis revealed that not all resources were significant in achieving superior performance. For example, there were weak correlations between percentage of fully

immunized children and doctors, registered clinical officers and nurses while for the same performance indicator, maternal and child equipments showed strong positive correlations. This should be interpreted with caution as the same medical personnel operated the equipments that produced the positive performance outcomes. According to the resource based theory, the stronger the correlation the more strategic the resource is. It was however observed from the regression models that when all resources were included in the model, the model correlation improved. A possible explanation is that the resources complemented each other and impacted on performance better when tested together rather than singly. In addition, some resources seemed to be performing poorly yet they are believed to be critical to the health system performance. A possible explanation is that these resources were below the threshold levels needed to make a discernible change on performance indicators. For example human resource personnel levels have not reached the WHO recommended ratios and therefore may not have impacted as expected on the indicators.

Regression model, although useful, should be interpreted with caution and used more as a guide. In social science performance determinants cannot be held constant and there are many variables at play that influence performance in unpredictive pattern. It has been observed however that tangible resources can have influence over performance. The influence may be positive or negative. However, it is the specific resources which explained superior performance.

The findings corroborate the empirical findings by researchers. Carmeli et al (2004) on their study involving industrial enterprises in Israel when investigating the influence of organizational resources on variations in firm performance found that intangible resources and capabilities were more critical to firm performance than structural resources. This may be a possible explanation of low correlations on hospitals and the health indicators. Bellaterra (2006) on evaluating efficiency in textile and clothing industry in the framework of resource based view (RBV) found that tangible assets are correlated with performance of firms in Poland and Spain. Newbert (2007) on reviewing RBT approaches observed that 50% of researches that use tangible resources and performance as constructs show strong positive correlations between the two variables.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the findings, conclusion and recommendations to policy makers and practitioners. It additionally identifies the study limitations and suggests areas for future research.

5.2 Summary of Findings

The study found that tangible resources have influence on performance of the county health services which supports the resource based theory (RBV). In all the cases, the tangible resources explained up to 56% of performance. This left some performance levels to be explained by intangible resources and external environmental factors. However, some specific resources have significant influence on performance than others.

Medical equipments provided to maternal and child health was the only consistent tangible resource with significant effects in every performance indicator. The resource correlated well with six of the performance indicators viz: % of fully immunized children, HIV pregnant mothers, deliveries conducted by skilled health personnel, women of reproductive age receiving family planning, and facility based maternal mortality. These could be a pointer that women and children may be the most significant users of the public health facilities or that their data is easy to record and keep. Another possible

explanation could be that these resources may be some of the few resources that have reached the resource threshold level to cause a discernible influence on performance.

Primary health care facilities were significantly correlated with women receiving family planning and per capita outpatient utilization. As expected these resources influence performance positively and the same argument of threshold levels may be advanced for this performance. Contrary to the expectations, health resources which are critical for achievement of health objectives like doctors, clinical officers, public health officers and nurses did not appear to be significantly correlated with the performance indicators.

5.3 Conclusion

The purpose of this study was to establish the influence of tangible resources on the performance of county health services in Kenya. It has been observed through the findings that tangible resources indeed influence performance and that the degree and direction of that influence depends on the performance area, resource type and resource level. County health services departments just like other organizations are heterogeneous; they have unique resource levels and types which partly explains performance variations. Resources tend to influence performance more when they are in combination than when they are investigated separately

The study is in agreement with RBT logic. County health services performance differentials can be explained in terms of tangible resource heterogeneity, observations that are consistent with RBT. RBT provides a model that can be turned into a practical

framework to guide the identification of current critical resources that are important to performance especially in resource scarce or restricted set ups like Kenya.

5.4 Recommendations for Policy and Practice

This study recommends a relook at how tangible resources are distributed across counties with a view to improvements on the resource allocation policy that eliminates the evident resource disparities. The constitution of Kenya strongly supports the principle of equity in resource allocation.

For the practice, facility health managers, need to acquire and deploy the respective identified tangible resources in terms of types and levels that are currently critical for a given performance area. They also need to monitor resource trends in order to identify those resources that can maximize performance. These resources may be identified using the framework provided by this study. It is confirmed by this study that the levels of specific resource and types are important to performance.

The fact that there is still a large percentage that fails to explain performance in terms of the tangible resources listed in this study, it would be interesting to look at the influence of intangible resources on the performance of county health services. This is because tangible resources cannot on their own produce performance. The counties need to support such a research so that investments in health are based on evidence.

5.5 Limitations of the Study

The first limitation of the study was the use of several measures of performance which did not measure overall efficiency for comparative purposes. Technical efficiency which has been used by researchers to measure efficiency of health performance systems should be used to provide a composite index for health attainment of goals. The composite index is a weighted average of the component goals. First, county attainment on all indicators (i.e., health inequality, responsiveness-level, responsiveness-distribution, and fair-financing) are rescaled restricting them to the [0, 1] interval. Then weights were used to construct the overall composite measure: 25% for health (DALE), 25% for health inequality, 12.5% for the level of responsiveness, 12.5% for the distribution of responsiveness, and 25% for fairness in financing. This was beyond the scope of this study.

Secondly, the accuracy of secondary data used in the study could not be guaranteed. Some of the interpretations must be taken with caution as the quality of the data determines the reliability of the outputs. Thirdly, resources had been evaluated singly yet there could be complimentarity or co-specialization of resources. This was beyond the scope of this study but can affect the findings.

Still this research had used resource heterogeneity methodological approach. A combination of organizing level, the conceptual, and the dynamic capability methodologies is recommended in RBT researches that involve testing the relationship between resources and performance (Newbert, 2007). The study had also used linear

regression models in the analysis with its inherent assumptions which may not hold true in the circumstances. Other advanced statistical models were not tested for best fit to the data.

5.6 Suggestions for Further Research

There are several elements not undertaken by the model presented in this study. A very important element missing in the model and emphasized by resource -based view are the firms' capabilities and their influence on performance. Moreover, RBV framework do not explain the process through which some firms reach competitive advantage in situations of change, attributed to dynamic environments. Strategy scholars tend to modify RBV by emphasizing the importance of dynamic processes giving rise to an approach referred to as dynamic resource-based view or dynamic capabilities. The dynamic capabilities approach which was omitted in this study opens another area for future research.

The data used did not contain information on qualitative performance issues of health objectives and in order to research those issues the qualitative study or quantitative study incorporating questionnaire should be developed. On the other hand, the dynamic evolution of efficiency concept and the usage of Malmquist productivity index (Malmquist, 1853) is an open area for further research too.

This research had used resource heterogeneity approach. It would be of interest to conduct a further research under other RBT approaches (organizing level, the conceptual, and the dynamic capability) or combination of approaches and compare the findings.

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APPENDIX 1: LIST OF COUNTIES

1. Baringo County
2. Bomet County
3. Bung'oma County
4. Busia County
5. Elgeyo/Marakwet County
6. Embu County
7. Garissa County
8. Homa Bay County
9. Isiolo County
10. Kajiado County
11. Kakamega County
12. Kericho County
13. Kiambu County
14. Kilifi County
15. Kirinyaga County
16. Kisii County
17. Kisumu County
18. Kitui County
19. Kwale County
20. Laikipia County
21. Lamu County
22. Machakos County
23. Makueni County
24. Mandera County
25. Marsabit County
26. Meru County
27. Migori County
28. Mombasa County
29. Murang'a County
30. Nairobi City County
31. Nakuru County
32. Nandi County
33. Narok County
34. Nyamira County
35. Nyandarua County
36. Nyeri County
37. Samburu County
38. Siaya County
39. Taita Taveta County
40. Tana River County
41. Tharaka Nithi County
42. Trans Nzoia County
43. Turkana County
44. Uasin Gishu County
45. Vihiga County
46. Wajir County
47. West Pokot County