

**INFLUENCE OF ORGANIZATIONAL DRIVERS ON UTILIZATION OF
HEALTH INFORMATION FOR MANAGEMENT'S DECISION MAKING: A CASE
OF IMENTI SOUTH SUB-COUNTY, KENYA**

FRANCIS KIMATHI THURANIRA

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MANAGEMENT OF KENYA METHODIST UNIVERSITY**

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DECLARATION

Declaration

I declare that this Thesis is my original work and has not been presented for degree or any other award in any other University.



Signature.....

Date: 29/10/2020

FRANCIS KIMATHI THURANIRA

HSM3-0124-1/2014

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Recommendation

This Thesis has been submitted for examination with our approval as University supervisors.

Signature.....

Date:

LILLIAN MUIRURI

Department of Health Systems Management,
Kenya Methodist University.

Signature.....

Date:

Dr. CAROLINE KAWIRA

Department of Health Systems Management,
Kenya Methodist University.

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DEDICATION

I dedicate this Thesis to my lovely wife and our children for their tireless encouragement, moral, emotional and physical support during the entire period of the study. God bless you for the noble sacrifice

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I would like to thank the almighty God for His provision and divine enablement while doing this course. I highly appreciate my supervisors Lillian Muiruri and Dr. Caroline Kawila for their professional advice and guidance which has made the writing of this Thesis a success. My heartfelt appreciation goes to my family for their continued support and encouragement, classmates and friends for their encouragement to the success in execution of this thesis. I would like to also appreciate Mr. Edwin Shikuku and team for their collective technological support.

ABSTRACT

Today's health systems rely on health information for effective management. In contrast, compromised global data control systems progressively undermine international disease control initiatives thereby cutting back on health gains. Allocative efficiency is strained by sub optimal Health Management Information Systems (HMIS). On the other hand, undetermined HMIS capacity challenges make it difficult to realize Kenya's informed county health priorities in a devolved health sector. This study embarked on studying the contribution of organizational drivers on health information consumption by operational level managers in Imenti South Sub-County hospitals. The study adopted a cross sectional study design incorporating quantitative and qualitative approaches. A target population of 64 managers heading various units of the 39 Imenti South Sub-County health facilities was used. Data was collected through questionnaires, interviews and observation techniques. Questionnaires were self-administered and adopting open and closed-ended questionnaires. Data was analyzed descriptively and inferentially. Inferential analysis employed regression and correlation analysis. In the results and findings, it was observed that the four exogenous variables included in the model revealed significant prediction for utilization of health information in health care decisions. It was noted by majority of the respondents that there was an increase in the establishment of data control systems in health facilities as opposed to a contrary finding earlier by the ministry of health. It was also evident that the evaluation of HMIS and information use was still very low and, in some instances, as was supported by a large percentage of the respondents, it had not been adopted. It was discovered that health facilities lacked proper structure in regards to the personnel for regulation of data and policies on data quality standards and therefore they would not maintain quality of data that could be relevant for decision making. Lack of crucial Information Communication Technology (ICT) components, lack of scheduled data audit and audit tools and a culture of using data to satisfy routine practices limited the utilization of health information in the health facilities. There was also a limitation in the health system's ability to provide a clear and evidence based assessment of its capacity to improve the health status of residents. Some of the key recommendations made were that health facilities in Imenti South Sub-County should invest in crucial ICT components that will enhance data security and maintain data quality and in turn make the data relevant to the decision-making process. The county government should also distribute national health information policy to all health facilities and train all employees on information processes and their associated importance in making health related decisions.

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ABBREVIATIONS AND ACRONYMS

CHMTs	County Health Management Teams
FBOs	Faith Based Organizations
HIS	Health Information Systems
HMIS	Health Management Information Systems
HRIO	Human Resource Information Officer
ICT	Information Communication Technology
IT	Information Technology
KBS	Kenya Bureau of Statistics
LT	Laboratory Technician
MDGs	Millennium Development Goals
MoH	Ministry of Health
NACOSTI	National Commission for Science, Technology and Innovation
OR	Odds Ratio
PHO	Public Health Officer
SPSS	Statistical Package for Social Sciences
USAID	United States Agency for International Development
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter provides the introductory chapter of the study. The chapter is divided into ten sections. The first section gives the background information of the study from a universal to a national perspective. This section is then followed by the statement of the problem which gives details about the problem that was investigated by this study. The subsequent sections in order are: purpose of the study, general objective, research questions, justification of the study, limitations of the study, significance of the study, assumptions of the study and operational definitions of terms.

1.1 Background Information

“A health system is made up of all organizations, institutions, people and actions that promote, restore or maintain health” (World Health Organization [WHO], 2007). Among the requirements for quality health services are; sturdy finance mechanisms, reliable information for decision making as well as comprehensive policies (Neame et al., 1995). According to Lippeveld et al. (2000), “the outcome of a health system encompasses health enhancement and impartiality in a manner that is receptive, financially equitable and utilize available resources optimally”. In many developing countries, health outcomes are poor and no country can be exonerated from the menace that is entrenched inequities in health status. Some of the existing challenges are getting drugs, vaccines and information in a manner that is prompt, reliable, adequate and affordable to users. Globally the responsible systems needed to provide such are deteriorating or are discriminating across populations. Failing or inadequate health systems impede bolstering interventions that promote attainment of health goals that are internationally agreed such as the Millennium Development Goals (MDGs).

The World Health Organization (WHO) has a framework for health systems made up of six essential functional health building pillars that are needed for quality health outcomes. These pillars include: health personnel, delivery of service, information on health, governance and leadership, finances, medical technologies, products and vaccines (WHO, 2007). A functional Health Information System (HIS) is described as one that ensures decision managers are in a position to produce, analyze, distribution and utilization and information that is timely at various health systems levels in ordinary operations and critical situation. It also includes health

determinants, health systems performance and health status. In order to achieve this, a health information system must possess components of information that collect and process data, disseminate information and offer a mechanism for feedback so as to realize an organization's mandate as well as store information for future reference (WHO, 2008). According to Lippeveld et al. (2000), clear performance indicators and sustainable HIS supply are critical factors for evaluation of efficient and effective health care delivery processes.

In many countries HIS suffer from mismanagement and insufficient resources. It is designed to produce information that serves interests of few specific projects lacking cognizance for the national policy that could regulate data quality and relevance. Also observed is that few developing countries to include Africa are able to produce data of sufficient quality critical for the evaluation and strengthening of health systems. Most of the global health data generated is seldom used for decision making (Lippeveld et al., 2000).

At some point, Nigeria's health information was highly variable in quality whereby underutilization of health information was attributable to lack of awareness of what was available, circumstances of misreporting, lack of apprehension, diminished confidence and palatability, limited relevance of available information and inadequate duration, skills and inducement to obtain and interpret information. In Ethiopia the major impediments to HMIS performance include, failure to pay attention to HMIS, inadequate resources, lack of strategic planning, missing information standards and guidelines, under staffing and poor ownership among others. This results in inconsistent reporting and substandard data preventing information users from proper use of data in research and making of decisions (WHO, 2007). Tanzania's HMIS generates data which is inadequate to permit policy makers and managers to derive information driven decision making at the national level as well as district level. This was attributed to reporting that was not complete, inaccurate data, inaccurate analysis and late submissions (Kimaro & Nhampossa, 2007).

According to Ekirapa et al. (2012), (HMIS) capacity undermines informed decision making across all levels thus compromising effective planning, monitoring and evaluation. In addition, they assert that the key challenges revolve around inadequacy of manager's capacity to use data for decision making and absence of training on evaluation of data, its understanding and writing of reports among others (Moreland et al., 2010). Meru County is structured into 9 sub counties that suffer disparities in their healthcare potential. This may describe a county whose health information system capacity varies across sub counties thus compromising on generation sharing and utilization for decision making. This is critical considering the integral role played by information in allocative efficiency and effectiveness especially at a time when health sector is in the hands of new managers in a devolved system.

Campbell (2003) stated that effective management calls for relevant and reliable information on which management decisions can be anchored. Care givers, managers and policy makers require information to arrive at proper decisions. According to Odhiambo-Otieno (2005), a tradition of using information cannot be fostered when there is failure by senior staff in advocating for decisions that are not focused on evidence and utilization of information for accountability and transparency.

In the opinion of Land and Kennedy-McGregor (2002), inadequate governance structures, failure of the leadership to enforce policy framework documents, and fragmented vertical strengthening interventions are some of the environmental drivers that undermine the value of HIS thereby discouraging its information use by operational level managers and for healthcare decision making. Among behavioral drivers' influence on HIS use include, data quality limitations, delayed submissions, limited managers' orientation to data features or even inaccessibility (Odhiambo-Otieno, 2005). Among the influence of technical drivers on information use according to Williamson and Stoops, (2001) include capacity limitation among health workers to include data managers such as limited knowledge on, data generation, processing and interpretation and exchange leads to submission of low quality data thereby impeding its utilization. According to Lippeveld, et al. (2000) nonexistence of quality control mechanisms facilitates generation of low quality data thus undermining manager's desire for its utilization in healthcare decisions.

1.2 Statement of the Problem

Reports from Health Management Information System (HMIS) unit of Meru County indicate that all health data relayed to their unit is obtained from all health care agencies to include Faith Based Organizations (FBOs), private and public sector. The key features of this data are either on case morbidity and mortality across all disease categories. Information generated from analysis of this data is presented to CHMTs as need arises so as to evaluate disease trends sector wide.

The source further confirms that departmental / unit managers get associated with health information only when need arises such as in the case of client file retrieval or a follow up on an infectious disease. There exists a data delivery schedule from all hospitals to the main county hospital through the sub-county referral hospitals. The exercise involves data submission for further analysis and storage at the county level. How this data informs healthcare decisions is unclear to the unit as they do not get feedback on data quality from consumer policy makers

and unit managers in the periphery who are also involved in data collection and submission their department.

WHO (2008) advocated for investment in HMIS owing to its potential to generate multiple benefits ranging from enhanced capacity for informed decision making to scanning and controlling health problems along natural history of disease spectra, as well as refocusing health to its goals based on close monitoring. However, developing countries such as Kenya have been noted to have a slow progress towards enhancing the national health information system characterized by poor quality data returns and little reporting and feedback. Previous studies by Ministry of Health (MoH, 2009) revealed that information sharing is very low across adjacent management units while Kihuba et al. (2014) argued that HMIS in Kenya suffers immense capacity challenges ranging from limited financing to staffing. There is therefore a need to establish the manner in which underlying organizational factors influence data utilization for decision making in Kenya's health system.

Various studies have established that most of the global data generated in developed and developing countries serves parallel interests. Overall decline in health indicators from misinformed healthcare policies cannot be underestimated. Several initiatives have been undertaken to satisfy previous recommendations of the studies, but none on the influence of the identified factors for utilization of health information in decision making. This study aimed to determine the influence of the environmental, behavioral and technical factors and information consumption modalities so as to recommend interventions for demand driven health information generation a critical pillar in health systems strengthening.

1.3 Purpose of the Study

The purpose of the study was to determine the manner in which decision making based on health information by operational level managers was affected by organizational drivers of health facilities in Imenti South Sub-County so as to suggest supportive interventions.

1.4 General Objective

The general objective of the study was to establish how decision making based on health information by operational level managers was affected by organizational drivers of health facilities in Imenti South Sub-County, Kenya.

1.4.1 Specific Objectives

- i. To find out how environmental drivers of hospitals in Imenti South Sub-County impact utilization of health information for decision-making by operational level managers.
- ii. To determine the manner in which behavioral drivers of hospitals in Imenti South Sub-County influence utilization of health information for decision-making by operational level managers.
- iii. To establish how technical drivers of hospitals in Imenti South Sub-County affect utilization of health information for decision-making by operational level managers.
- iv. To determine how modalities for health information use by hospitals in Imenti South Sub-County influence utilization of health information for decision-making by operational level managers.

1.5 Research Questions

- i. How do environmental drivers of hospitals in Imenti South Sub-County impact utilization of health information for decision-making by operational level managers?
- ii. In what manner do behavioral drivers of hospitals in Imenti South Sub-County influence utilization of health information for decision-making by operational level managers?
- iii. How do technical drivers of hospitals in Imenti South Sub-County affect utilization of health information for decision-making by operational level managers?
- iv. How do modalities of health information use by hospitals in Imenti South Sub-County influence utilization of health information for decision-making by operational level managers?

1.6 Justification of the Study

According to Campbell (1997), managing effectively requires relevant and reliable information on which to base management decisions. Care givers, managers and policy makers require information that is focused on decision making. According to Otieno (2005), the failure of managers to promote decisions based on evidence and utilization of information for accountability and transparency leads to a tradition of not using information. According to Ekirapa et al. (2012), (HMIS) capacity undermines informed decision making across all levels thus compromising effective planning, monitoring and evaluation.

The utilization of relevant data on health emanating from different health systems levels is an integral part of planning, monitoring and evaluation of performance within the health system.

It further enhances the standards of services provided by health care and therefore the health of a nation. According to Brosio (2000) the healthcare system comprises of an ally of institutions whose performance is data dependent and thus utilization of data is an important part of the system.

The WHO (2008) further advocates for investment in HMIS owing to its potential to generate multiple benefits, ranging from enhanced capacity for informed decision making and to scan and control health problems along natural history of disease spectra, as well as refocusing health to its goals backing on close monitoring. However, developing countries have been noted to have a slow progress towards enhancing the national systems on health information signaled by poor quality data returns and little reporting and feedback (WHO, 2007). Previous studies by MoH (2009) reveal that information sharing is very low across adjacent management units while Kihuba et al. (2014) argues that HMIS in Kenya suffers immense capacity challenges ranging from limited financing and staffing challenges. There is therefore a need to establish the underlying factors that influence data utilization in Kenya's health system.

Various studies have established that most of the global data generated in developed and developing countries serves parallel interests. In absence of information attributable losses, the factors under study have been implicated with information misuse globally. Overall decline in health indicators from misinformed healthcare policies cannot be underestimated. Several initiatives have been undertaken to satisfy previous recommendations of the studies, but none on the influence of the identified factors for utilization of health information.

1.7 Limitations of the Study

Among the critical study limitations include result generalizations by its very scope of using samples to represent the sector wide healthcare facilities. Each of the three facility categories as it is the case with health structural tier stratifications has unique characteristics that would have been more appropriate if studied separately. However, the study outcome will provide reliable information that will form basis on which to guide future category specific studies. In addition, inadequate logistical capacities portend an impediment to the current research in expanding the study scope to the all 47 national counties which would have provided a national reflection of how HMIS performs since devolution of health care. However, it is envisaged that future researchers used this study as their baseline to conduct more comparative studies in other counties.

1.7.1 Delimitation of the Study

This study concentrated on the selected hospitals to serve as representative clusters for the tier wide inclusion. The study was conducted over a 12 months' period beginning Feb. 2015. More studies were recommended to capture the remaining health institutions.

1.8 Significance of the Study

This study focused on to establishing how decision making based on health information by operational level managers was affected by organizational drivers of health facilities in Imenti South Sub-County of Meru County. This was necessary so as to reveal the contributions of the organizational design towards uninformed healthcare decisions thereby suggesting corrective interventions. The study also aims to determine the contributions of behavioral drivers towards uninformed health care decisions among managers at health facilities in Meru County. The information generated here was used to create awareness among managers on how their behavior undermines informed healthcare investments as occasioned by misinformed health investment decisions. The study also established the influence of technical drivers towards uninformed healthcare decisions operational level managers in Meru County. This generated information that was shared among the county health management aimed at winning their adoption for information guided healthcare investment decisions. The study findings were shared among county health information managers so as to suggest areas for the future research. Information generated from this study was availed to the library for future references.

1.9 Assumptions of the Study

The study's assumption was that in the course of the study period, the respondents were all available at their work place and were will disposed to engage in the study process, they provided most honest objective data and that the institutional authorities provided a conducive environment during data collection.

1.10 Operational Definition of Terms

Behavioral drivers	This involves all human characteristics to include value for information use and sharing promotion of information investments, or evaluation on information quality and providing feedbacks to information processors and advocacy for routine system maintenance.
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Decision	This refers to an individual's deliberate choice of an action based on multiple options.
Driver	This refers to any individual contribution that may have reinforcing or negating influence on managers desire to support generation and consumption of health information for health promoting decisions
Environmental drivers	This refers to organizational factors such as organizational investments such as infrastructural designs, computer hard wares, software's, and other data management devices that contribute to information processing and utilization.
Health information	This entails knowledge gathered from the previous health organizational performances and associated inputs linking positive and negative outcomes to associated investment.
Information and communication technology	This refers to all computer hard ware and software that aid in processing and utilization of health information.
Operational level managers	This entails a level of managers whose role is interpretation, communication, and supervising execution, of activities that results in achievement of organizational goals.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter provides empirical literature on organization drivers for the use of health information in decision making for strengthening of health systems among unit managers of selected hospitals in Imenti South Sub-County of Meru County. The research gaps that the study aimed at filling are also elaborated. The penultimate section of the chapter provides the theoretical framework that guided the study, showing the relevance of the theory to this study. The final section of the chapter gives the conceptual framework adopted by the researcher.

2.1 Environmental Drivers of Information Utilization

According to Brosio (2000), healthcare comprises an ally of institutions whose performance is data dependent. Gething (2007) describes HIS data as that which includes complete enumeration, surveys on households and requisite enrollment structure whereas health institutions engage in public health surveillance. An Evaluation of Kenya's HMIS by the United States Agency for International Development (USAID, 2010) revealed that collected routine service data is depending on reporting from various health facilities and records on patient service. Treatment points fill the data sheets and tender schedules on a monthly basis to the district level, a process that adopts an onward transmission using a file transfer protocol within the national level.

There was an above 80% rate of response across the facilities. This emphasized on HIS strengthening as it proved to be a fundamental component of any health system. USAID viewed the role of health information as one that guides evidence based decision-making instead of regularly obtaining data on health services and data relay to higher level centers. Its main role was appraising health status of the population hence programmed to enhance health program planning and service delivery and management.

According to MoH (2003), most of the data generated in the then Kenyan districts employed manual papers with resultant compromise on coordination and maintenance of a uniform system of monitoring implementation of health services. The situation was occasioned by an absence of legal foundation and a policy that could homogenize and implement the management of information and data within the entire level. A survey conducted by USAID, (2010) discovered limitation on resource assignment for development, publicizing and conveying of reports on a periodic basis, alongside limitations on financial allocation on information

collection collation, analysis and embracing a tradition of managing knowledge that could assist in sharing and learning of best practices and experiences.

The WHO (2008) further advocates for investment in HMIS owing to its potential to generate multiple benefits, ranging from enhanced capacity for informed decision making and to scan and control health problems along natural history of disease spectra, as well as refocusing health to its goals backing on close monitoring. Other gains are a solid documented base for proper and efficient policies on health that hence encourage assessment of improvement efforts and promoting creativity via systemized investigations. Functional HMIS also promotes prudent leadership with new ways of generating information and enhanced obligation in the manner in which they are utilized. Information is therefore regarded as a powerful vehicle for effective service delivery (WHO, 2008).

Environmental impediments to functional HMIS are characterized by inadequate governance structures, failure to implement policy framework documents, and fragmented vertical strengthening interventions. Others include lack of information feedback as well as failure to use of information in making decisions and administration throughout the systems of health and units of management. In an earlier survey done in Ethiopia by Teklegiorgis et al. (2016), it was revealed that 77.1% of participants in all the facilities collected health data on daily activities of a patient. Most (61.2%) of the respondents collected socio economic and demographic data, only (49.4%) respondents said that there was a rule for minimum period of maintenance and dispatch time concerning data. Most of Data collected (18.3%) was used by external users, (19.3%) had mechanism to disseminate health information.

2.1.1 Information Culture and Information Use

Limited management commitment at all levels of organizations impedes the execution of information systems related to health. Information culture is defined by Zheng (2005) as a broad potential, perspective, standards and regulations of behavior concerning access, understanding and use of processed data in the society as a whole. Campbell (2003) clarifies that definition further adding that a tradition of using information starts to develop when the unified attributes of an information system of health becomes a regular practice whose key components encompass peer review, self-evaluation and data collection.

Health care workers, in spite of training on HIS, always end up not utilizing the collected data as required (Galimoto, 2007). A tradition of reporting instead of information utilization is observed. Underutilization of information in the making of decisions is a heritage that is evident at the level of the facility among health managers in many of the nations that are developing. Studies conducted by Neame et al. (1995) in South Africa, Nepal and Ghana revealed that even

though a majority of the districts exhibited accuracy in data collection and analysis with routine feedback of reports to management and facilities, they did not embrace a culture of information use. The study revealed huge inconsistencies in the tradition of utilizing data. Among the districts studied, various styles of management were observed within similar cultures of the organizations (Neame et al., 1995). In Malawi, Moyo (2005) revealed an underutilization of information which was 30% at the level of the facilities as they used information for monitoring, 40% of the facilities were having discussions about information and 20% were making decisions after the discussions. In Ethiopia, a similar study was conducted by Teklegiorgis et al. (2016) and revealed that information use for decision making stood at 45.6%, 64.7% for future reference, 35.3% to analyze trends in service delivery while 42.4% used information to pass report data to health office. Also revealed by 27.7% of the respondents was that there were policies concerning information use and 32.1% had legislative and regulatory environment about data security while 18.9% reported existence of incentives for information use.

2.1.2 Technological Infrastructure and Information Use

According to Neame et al. (1995), there is interdependence between job efficiency and the availability of requisite technical mechanisms to undertake the tasks as well as the level at which the tasks is satisfactory. Use of ICT is technical and calls for earlier exposure by training and handling regrettably most of the global clinicians have limited computer literacy thus leading to preference of manual papers in all data management processes (Boone et al., 2013).

Rhoda et al. (2010), had also observed that data management software lacked from most of the global economies. This is a problem occasioned by organizational ignorance or expensive procurement options, this compounded by absolute lack in local markets. The duo observations were echoed by Gopalan et al. (2013), who argued that ICT is a new technology globally and worse among resource limited settings such as Africa. An introduction of such technology to nations that are economically depressed would therefore not only sound terrorizing but would be opposed by some managers in the light competing cheaper misinformed health priorities.

Utilization of ICT by health workers contributes to reduction in the rates of medication errors in clinical practice (Carbone, 2009). This must as much as possible be reliably correct as verified by reporting clinicians and skilled data clerks responsible for data handling. This scenario will can only be viewed as the main reason why health indicators will remain varied across various levels of health care delivery as well as across health providing partners as and national economies hence increase in disease burdens.

Teklegiorgis et al. (2016) revealed that there was the necessary equipment in the health facilities in Ethiopia. However, only (30.6%) are reported to deliver basic computer trainings to their

staffs. (48.8%) of respondents attended HIS trainings, only (39.4%) of them reported to have coordination mechanisms among the other sub components of HIS concerning the availability of equipment for HIS activities, Majority of the respondents both in Hospital and Health Centers answered there was stationary materials like paper and pen but there was shortage of IT equipment like computer, internet or any kinds of network.

2.1.3 Information Policy and Information Use

Globally, technical impediments in the production, tactical utilization of information on health, documented operations on health systems and policy guidelines include: HIS with inadequate quality control measures; staff training that is deficient evaluation of data, elucidation and its utilization on all levels; weak monitoring; and inadequate Information Technology (IT) facility and technology (Lippeveld et al., 2000). They also advocate for development of routine information systems that are rationally structured and tightly embraced within the requirements of health services at all echelons of health care delivery institutions. Consequently, this contributes to comprehensive improvement of health service management. In Teklegiorgis et al. (2016), (80.6%) of the respondents confirmed that data was classified and coded. (59.4%) respondents replied that data were classified according to some criteria.(59.4%) respondents agreed there were local quality control mechanisms in their facilities and only (45.3%) of respondents answered that there were supportive supervision and feedback mechanism by other organs.

On policy (42.2%) respondents reported that existence of policy in the facilities concerning for information use; nevertheless, merely (18.3%) respondents claimed that there lacked an incentive for information use. Concerning legislative and regulatory environment for data security, (47.5%) respondents reported availability of legislative and regulatory environment for data security, about (42.9%) respondents reported availability of legislative and regulatory environment on retention and destruction of data, in relation to data transfer (47.6%) respondents had legislative and regulatory mechanisms for data transfer to external user. Concerning data dissemination (45.2%) disagreed that that there were mechanisms to disseminate health information (Teklegiorgis et al., 2016).

2.1.4 Evaluation of HMIS and Information Use

According to World Health Organization WHO (2007), majority of nations that are developing have endeavored to intensify their own information systems on health with the help of agencies that they have partnered with. Their occasional evaluations revealed that overall progress was slow coupled with ill-timed data returns that were of poor quality, underutilization of information, minimal reporting and feedback. Scarcity of reliable data hampered planning, monitoring and evaluation of services related to health. At the levels of local, state and national

government, health services could not be properly managed on account of the available data. A continuous addition of data was accessible though it was of variable quality and coverage. As a result, it was not possible to link information to policy-making at the national level.

Nigeria is one of the countries found to have limited quality of health information. There was underutilization of this information due to: low confidence and acceptability, poor understanding, scarcity of awareness on what was available, misreporting of conditions, irrelevant information (inappropriate in terms of scope, format, language and style), inadequate time, incentives and skills to its accessibility (Aldano, 2008). A study conducted in Malawi established that about 55% of the facilities had records of meetings held three months' prior (Moyo, 2005). According to the facilities records 15.4% of the facilities had discussed HIS findings and decisions were made by 18.4% of the facilities after discussing the findings. The study further showed that all the facilities referred most complications to higher levels for assistance. On average, the facilities revealed functionality of the HIS processes, as less than ten percent of the criteria for assessing HIS processes were met. On average, 11.8% of the criteria for checking data quality were met and 5.5% of the criteria for the display of data were met.

An evaluation study conducted by Campbell (2003) at Kwa Zulu South Africa revealed that validation of data was confined within completeness and correctness of data submitted. Staff in clinics reported that though the data seemed incorrect, verifying it was seldom accomplished because of deficiencies of time. Inadequate data assessment was done by clinic supervisors. Data were neither discussed nor analyzed in staff meetings. When clinic staff were presented with graphs of indicators derived from their facility data, none of them could derive those indicators. However, a majority were able to interpret the graphs.

2.2 Behavioral Drivers of Information Utilization

According to Elaine et al. (2007), management is a function of decision making and it's made of three components: triangulation of decision makers, decisions that are guided by information and the decisions made. Management activities rely on caliber of the decisions made and the quality of data used for their generation. According to Campbell (2003), informed decisions are too far distinguishable from those that are driven by a political agenda or are based on intuition or experience. He further explains that failure to comprehend the happenings at the health facilities and health systems causes' inability to craft approaches that guide the habits or the general direction of policies on health.

Consequence of behavioral effects on demand for information demand and utilization always call for views that are indefinable like attitudes, values grasped by individuals concerning health information, motivation, roles, job performance and the structure of authority. Establishing some of the aspects associated with behavior demands interceding way above just training so as to enhance skills and knowhow in data analysis and information utilization (Aqil et al., 2009). According to Chaled et al. (2013), regular users of information require competence, motivation and confidence in conducting their chores. These in turn directly affect the system performance and processes. In addition, individuals have varied feelings concerning the benefits or results of an activity including complications of the activity (Jutand & Salamon, 2000). These are more likely to affect the task to be performed. Sonderegger and Sauer (2010) demonstrate that individuals aren't aware of a difference between their actual and perceived skills in executing an activity.

2.2.1 Managers' Attitude and Information Use

Odhiambo-Otieno (2005) noted that the views and frame of mind of senior managers in regards to the implementation and design of HIS play an overwhelming role in its utilization. Failure by senior manager's advocate for decision to be based on evidence and the utilization of information in promoting accountability and transparency leads to an environment in which the tradition of using information is not likely to be actualized. He therefore recommends examination of the values, attitudes and perceptions senior staff among other members of the organization towards functions that are related to information. It is also observed that a negative attitude among health workers towards data collection translates into resource misuse hence detrimental to data quality. He further advocates for motivation of data collectors that is consistent with coaching on the collection of data through questionnaires and registers. This is because the attitude of employees with regard to the management of health information conditions the utilization of such data for purposes of delivering services at the collection point. However, in Ethiopia, Teklegiorgis et al. (2016) revealed that of all the respondents, (64.7%) put their data at administrative level. Less than 45.6% affirmed using information for decision making. Among them 35.3% for future reference, those who discerned trends were 42.4% and 42.9% are disseminate to the health unit the reported data. Regarding the dissemination of data, almost all the facilities (four) used information to pass report data sub city/regional state of health bureau.

2.2.2 Feedback and Information Use

According to Land and Kennedy-McGregor (2002), provision of feedback is regarded as a critical evidence of information utilization. On the mode of feedback dissemination, the duo further advocates for either providing graphs within their reports comparing and showing scaled

achievement within countries, districts or facilities or filled forms varying from basic tables of the reported data. They add that the feedback can be verbally provided when being supervised or when in a meeting. Failure to appraise health information leaves health facilities at all levels with no basis of decision making. Health services also suffer in the long run (Seitio-Kgokwe et al., 2015). Data generation should be guided by organizational demands for health systems strengthening. As such the health management should audit data quality routinely and update HRIOs so as to protect its quality and relevance. However, study conducted in Malawi revealed that only 40% of the facilities received a feedback report from their management.

Regrettably there has been no reported feedback on information quality across all receiving agencies in the districts, sub counties and counties. There is no systemized mechanism at any level that permits the very routine feedback the same way there lacks any evidence of information sharing even across adjacent management units (MoH, 2009).

Concurring with other authors, Chaled et al. (2013) supports timely dissemination of reports and prompt data sharing as it serves as excellent means of routine information utilization. Among observed obstacles to this practice include tight business schedules at higher management circles that time available is too short to concentrate on information sharing. The top down fashion of management has also been incriminated among key detractors to information feedback.

From Teklegiorgis et al. (2016), 64.6% respondents claimed that there were no coordination effort and leadership in their facilities. Majority 56.7% agreed that control of budget is important for health information utilization. Moreover, 47% and 41% of respondents agreed that motivation and promotion are important for information utilization.

A similar evaluation conducted at Kwa Zulu South Africa by LaFond and Fields (2003) revealed that feedback on the data from clinic supervisors to clinic staff and from district offices to clinic supervisors was never available. Staff were not aware of how their clinics faired compared with other clinics or to national targets. Display of data in graphical form was only witnessed in a few of the clinics. The display, however, was usually of raw data rather than indicators and with the exception of one clinic, all were outdated. It was further noted that the data was used from time to time as a reflection of the clinics' work burden and to inform their health education sessions. Nevertheless, there was, some level of understanding of the usefulness of the data or its application in facility or program management. A number of clinics had come up with operational plans but data from those clinics was never utilized to influence monitoring or for meeting targets.

2.2.3 Information Support and Information Use

Data Technocrats to include Statisticians, epidemiologists, and demographers are considered necessary to manage data quality through its standardized collection, collation, consolidation and analysis security and dissemination so as to facilitate utilization of information nationally (Gopalan et al., 2013). Within the lower county and sub county levels of healthcare, HRIOs should be take charge over the data collection, collation, consolidation and analysis security and dissemination to users locally and upward the national level. This will eventually eliminate the current data compromises that emanate from misinformed data handlers at all levels of healthcare delivery systems. As such they will be left to operate within the confines of their professional training resulting into reduced workload (Gopalan et al., 2013).

Kihuba et al. (2014) argues that HMIS in Kenya suffers immense capacity challenges ranging from limited financing and staffing challenges. This observation was shared by Gopalan et al. (2013) who had also emphasized on the need to promote health information capacity for their inherent potential to impede formulation of informed organizational policies and guidelines. Such trends as observed by the duo does not only describe systems that devalue health information but compound on an existing vicious cycle of underperforming health indicators.

According to, Lippeveld et al. (2000), HIS in many countries have three major setbacks: management and insufficient resources, nonexistence of evaluation and managerial capacity at the peripheral health facilities as well as inadequate skills and incentives to access information. Moreover, health information systems in many state seldom offers enough bolstering for HMIS and health care personnel are required to furnish broad disease and patient's information without getting any response. In return, information systems become obstacles rather than tools of management and are often data driven rather than action driven. According to a study conducted in Malawi, 10% of the facilities showed promotional activities for using information, On the Level of existence of HIS processes facility staff responses showed that on average, 46.6% of the supervision quality criteria were met. Regarding the incentive like money, training and recognition (18.3%) of the respondents reported existence of incentives that encourages information use. However, (62.8%) respondents reported nonexistent of incentive particularly in their facilities for information use. This contradicted a similar study by Teklegiorgis et al. (2016) that revealed existence of legislative, regulatory and planning framework concerning the use of HIS, as supported by (62.4%) of health workers in their facilities. However only (44.7%) of the respondents reported existence of HIS office in their facility. Only (43.5%) respondents reported availability of HIS personnel specifically assigned for HMIS activities. Only (21.2%) of the respondents agreed that there was a budget allocated for HMIS activities.

2.3 Technical Drivers of Information Utilization

According to MoH (2001), HMIS is an integral component of management owing to its contribution to health systems strengthening. This goes a long way in improving health care indicators. Its contribution towards promotion of infection prevention and control practices cannot be overemphasized. More so, the health services assessment, monitoring and planning nationally which is pivotal on health information. Despite of its immense contributions myriad of challenges continue to depress this essential health strengthening pillar to include deficiency of systems guidelines, limited capacities of HMIS staff, congregation of unskilled data collectors across all of the hospital departments limited data compilation coding analysis and transmission capacities and poor integration and coordination practices to name a few.

The MoH (2009) argues that, most of the data collected in health sector cannot be linked to its source owing to its nature of fragmentation and lack of exhaustion. This echoes an earlier observation that the piecing up this information together into an integrated system is a mirage.

According to USAID, (2010) HMIS in Kenya is weak and most of the investment partners have interest in reversing the trend but instead focus on short term gains. This does not only continue to depress an underperforming system but will all together put the nation into perpetual state of developing policies that will never bear fruits. Worse of it is that the system is so porous to allow for authorized data generation and release from unskilled data collectors. The upright programmes frequently receive data from different facilities, basically with each having its individual procedure of transmission and forms. This basically massively elevated the workload, and also led to inconsistent data being produced which could be utilized in making decisions (Scott, 2005). Advocates for training of health managers across all levels on the need to embrace information guided decisions. They ought to learn all the essentials of health data, to include sources, collection procedures, necessary collection skills the requisite data manpower, analytical tools and transmission procedures alongside storage, security, and data retrieval protocol.

According to Marie and Higgins (2001) for any meaningful and productive health care decisions health information is inevitable. Nevertheless, this is replaced by inaccurate data figures or intuitions which end up in poor planning. They further add that despite the information provided to managers being timely and relevant in making informed decisions, immaterial information leads to cumbersome making of decisions, uncertainty and ultimately impacts organizational achievement.

2.3.1 Training and Information Use

Among key hindrances to data utilization is the inability of data handlers and managers to analyze it owing to their limited skills, this ability should form part every manager's responsibility so as to give data the value it deserves (Tekabe et al., 2009). Therefore, for any health information to be useful, it must be validated by management experts who are partakers of information-based health care policies and investments. This will then ensure that the information comes in handy to final decision or policy makers. A further recommendation is that all health workers across entire organizational units must be oriented in data collection, collation, consolidation analysis and transmission to enhance information utilization and sharing.

According to Dumont et al. (2012), data handlers suffer literacy challenges in collection collation, consolidation and data analysis, this compromise on the quality and relevance health information being shared across decision-making levels. This was found to undermine achievement of health gains nationally. Major issues revolved around interpretation of basic parameters such as ratios, intervals, rates and proportions among others. The most unfortunate is the demand for a data that cannot be structured in simple local dialect that can be easily understood by locals and would want to adopt it for its ability to satisfy cheap accessibility.

Williamson and Stoops (2001) noted that limited knowledge and skills of the managers on data processing, analysis and interpretation results into their inability to use health information thus posing an impediment to their problem solving abilities. Other factors include inappropriate transfer of skills inside facilities because of high number of employee turnover and miscommunication of emerging knowledge inside the clinics; failure to understand pointers, inadequate clinic response; data inaccessibility required in measuring pointers; and deficient mathematical expertise among healthcare staff and managers. According to LaFond and Fields (2003), feasible accessibility and utilization of standard health information most likely to be achieved from an approach which pays attention to: enhancing technical standards of processing data and apparatus, developing personal capacity to allow comprehension and data utilization in supporting the context of the organization in strengthening acquisition and utilization of data.

A study conducted in Malawi by Moyo (2005) to establish the extent to which Malawi's Health Information system policy and strategies for improving data quality and use were being implemented as well as staff motivation, revealed that of the scheduled reports, feedback was available in 40% of the facilities. The findings also observed an underutilization of information which was minimal within the level of the facility because only 30% of the health centers used information for monitoring, 40% of the facilities were having discussions about information and 20% were making decisions after the discussions. Further, 51.1% of respondents agreed

with the existence of standard set of indicators in their facilities. Most of the respondents (65.2, %) disagreed with the existence of trained staff to fill forms. Majority of the respondents (about 66.7%) also disagreed that skilled human resource were assigned for HIS activities and large number of the respondents also disagreed with the existence of appropriate technology in their facilities to perform HMIS activities. In addition, 65.7% of the participants lacked proper technology capable of utilizing information. Those who agreed with the need for appropriate technology were nearly three times more than those who did not. Moreover, a standard set of indicators, trained staff to fill forms and skilled human resources were the predetermined factors for information utilization while well designed reporting and friendly forms had no contribution for information utilization.

2.3.2 Information Quality and Information Use

According to Teklegiorgis et al. (2016), facility level managers must supervise, production sharing and evaluation of information relevance at facility level. This will not only enhance quality but promotion of its demand across all players in a normative fashion.

Among quality issues affecting health information utilization, according to Wilson et al. (1988), include: suboptimal data collection, interpretation of results from analysis and their level of utilization; conditions inadequately being reported; lack of comprehension, diminished level of acceptance and confidence. They consider healthcare providers to be a very varied category with diverse social, economic, cultural, educational and behavioral characteristics. The team observes that most of the data generated in most of the developed and developing countries is meant to satisfy routine procedures but irrelevant to its very purpose thereby discouraging its consumption by all health professionals to include even the data processors who are involved with its development.

2.4 Modalities of Health Information Use

According to Gething (2007), healthcare decisions are most often focused on serving political opportunism, expediency or donor demand. Occasionally, these decisions also target intermittent global surveys that do not regard changes taking place within a short time scale such as Demographic Health Survey (DHS). Consequently, this poses an impediment to improved health sector performance. Data gathered is not used to explain community's health position nor provide cost benefit analysis of health services and treatments.

WHO (2008) acknowledges that health care providers across all echelons of the health care system cannot diagnose health problems and immediate system demands. Further, they cannot

locate performance and audit the effect of interventions with resultant inflation on operational health costs processes owing to frequent occurrence of diseases and breakdown in approaches of patients' administration. It has eventually increased on the service demands with high human resource requirements from unprecedented unnecessary workloads (Mogere, 2010). Mogere further observes subsequent compromise on quality of health care and a misrepresentation of the community health status and slowed attainment of health goals.

Ministry of Medical Services and Ministry of Public Health and Sanitation (MoMs & MoPHs, 2010) observed that less than seven percent of data collected is evaluated thereby denying the ministry critical information for decision making. Further argument is that in the light of enormous personnel resources and finances injected in the collection of data, it is never utilized in monitoring the advancements and interceptions effects leading to a lower attainment of indicators, elevated work for healthcare workers and a higher cost for patients.

According USAID (2010), data on the status of health, services of health and demography are the three principal data types. Among areas that information produced by respective data include disease control, service delivery, intervention forecasting and trends administration in performance of service coverage and morbidity. Campbell (2003) argues that it is at the district level and below that HIS may gain remarkable value and also in instances of individual strength of employees and the community being relied upon. In addition, numerators and commonalities may also attract personnel recognition. Further he explains that with proper utilization, the data in HMIS may have potential to achieve a powerful tool that would ensure the delivery of health in a frequent and effective manner. As explained by Aldano (2008), a data-driven decision making implies using the collected data regularly to inform planning and reporting of activities. He further concurs with other authors who regard Use of data in decision making as an integral component of sustained improvement trend in health system. Aldano (2008) further regrets that in the light of all the global investments data value remains underestimated by various players in health who advocate for routine data generation oblivious of immense contribution it has on allocative efficiency and effectiveness.

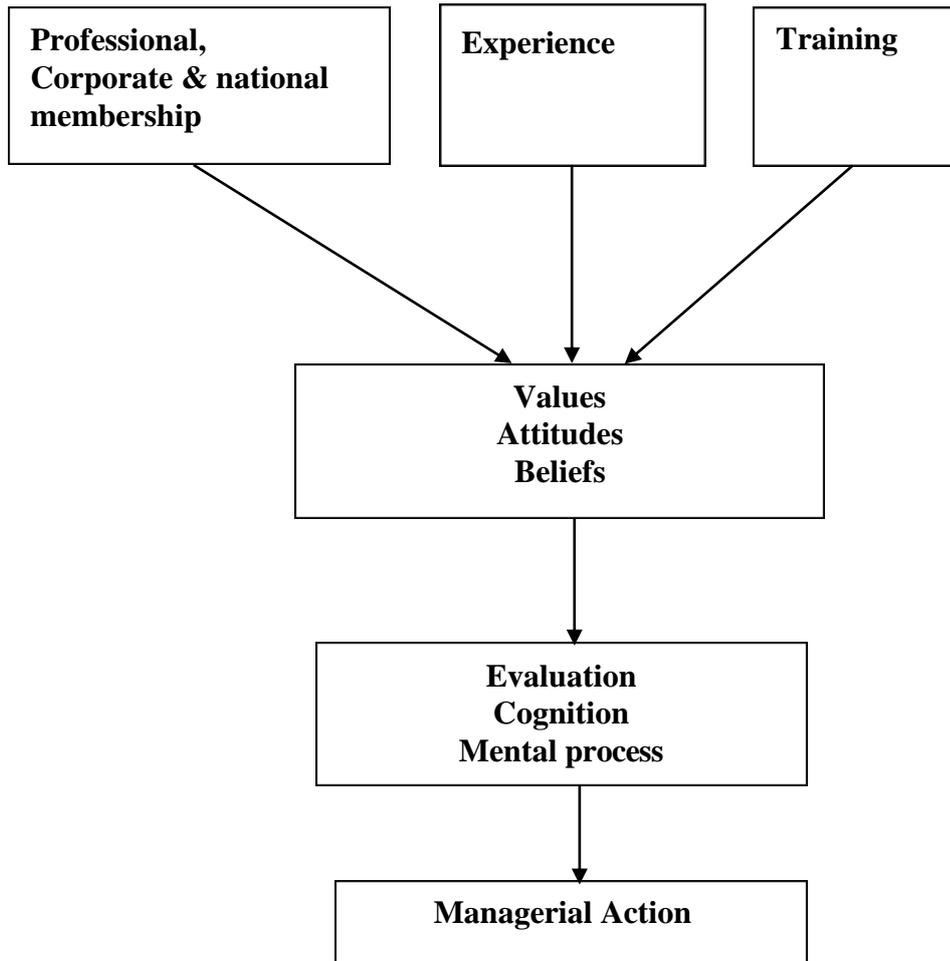
Among other recommendations are despite of data generation one should not only store but ensure transmission to leaders, consumers and managers, in the health sector leaders. These will support data analyzing mechanisms and further utilization for key health decisions. WHO (2008) states that health facilities ordinarily collect data in bulk more than they require. More often than not they are poor in information and rich in data. In contrast, information is the heart of the entire building structure necessary for strengthening systems of health and allowing managers in the health sector to better use the data in planning, assessing health programmes, monitoring, execution and making of policies.

2.5 Theoretical Framework

Theory according to Child (1997) studied integrative potential of strategic choice within organizations. He stated that strategic choice follows the determinism theories (structural, contextual, environmental) in regard to decision makers. Strategic choice is a process whereby power holders within organizations decide upon courses of strategic action. Decisions of such managers are guided by attitudes, values and beliefs based on their professional, corporate and national affiliation. Culture, experience and training impact evaluations, cognition and mental process culminating into an action. The relevance of this theory on utilization of HIS for health care decision making includes the fact that organizations decisions are made by managers who apply their professional knowledge or contributions from professionals in various disciplines working in the health sector. The manager's decision to apply information for health care allocations is influenced by organizational culture that serves the interest of the affiliate institutions, either national or corporate, and application of his experience and training to convince the employing bodies otherwise. Political expediency and donor fund power have been found to influence HIS quality and its utilization from previous studies. The theory is summarized in figure 2.1 below. This study borrowed the idea that decision-making by managers of health facilities is information based and the information thereof is reliant on the organizational nature.

Figure 2.1

Strategic Choice Theories



Source: Child, 1999

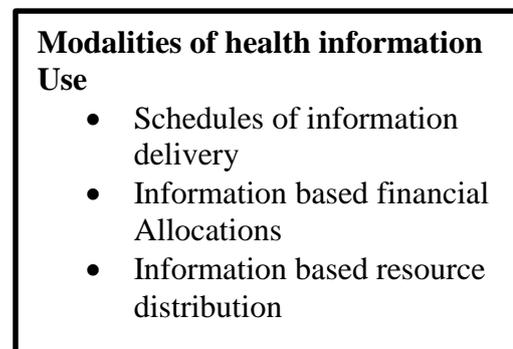
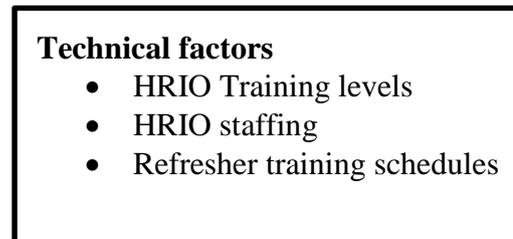
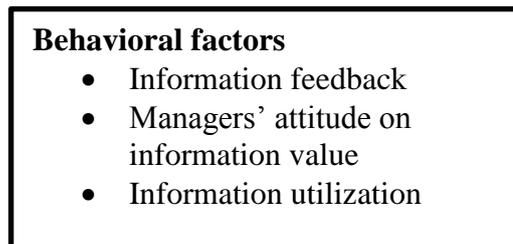
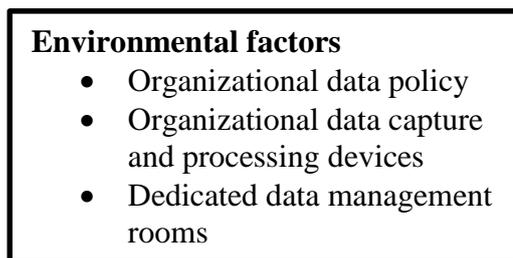
2.6 Conceptual Framework

The study adopted the conceptual framework shown in figure 2.2 below.

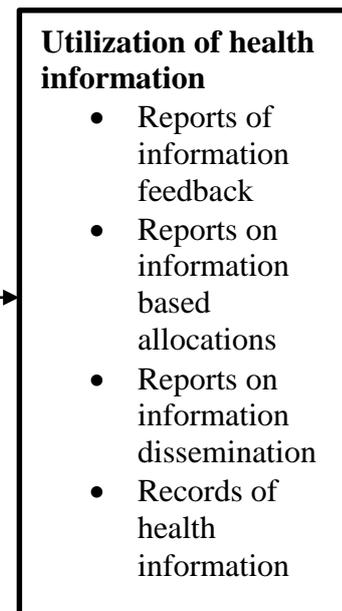
Figure 2.2

Conceptual Framework

Independent variables



Dependent variable



Source: Author, 2020

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter provides the approaches and methods that were used during the study. It describes research design, target population, sampling techniques and sample size, instrumentation, methods of data collection, operational definition of variables, methods of data analysis and ethical considerations.

3.1 Research Design

A cross sectional descriptive study design employing quantitative and qualitative approaches was employed. The choice of this design was based on its ability to give a snapshot of events as they are at a specific point in time (Oso & Onen, 2009). It was also preferred for its ability to satisfy descriptive and analytical requirements of the study. The purpose and approach of the study called for a design that was more focused towards intended results (Kothari, 2011).

3.2 Target Population

The target population involved operational level managers including nursing officers and medical lab scientists heading peripheral facilities as well as public health officers and HMIS officers heading respective units in Imenti South Sub-County health facilities. In total, the target population consisted of 64 operational level managers across 39 registered health facilities that were operational at the time of study in Imenti South Sub-County. The study focused on managers across public, private and Faith Based Organizations (FBOs) health facilities based on the fact that health information ought to consolidate centrally for purposes of monitoring countywide disease trends and inform containment strategies. The major feature about the health facilities was the that fact they were all registered and operational health centers providing medical services to residents of the Sub-County. On the other hand, the operational level managers were chosen because they had the common characteristic of being decision makers in their various dockets and the decisions they made were dependent on the information gathered from their respective health facilities.

3.3 Sampling Procedure

Census approach was employed targeting 64 operational level managers to include 39 facility managers across 39 facilities. The method was preferred because the universe was considerably small and it made up the subjects of interest in the study (Kothari, 2011). Key informant guide was used among HIS managers. Observation guide that established the infrastructural designs and other technologies investments in the facilities. A summary of the sample size is presented in tables 3.1 to 3.6 below. The tables present the 64 operational level managers in the 39 health facilities across the six administrative wards of Imenti South Sub-County as follows: table 3.1, Abogeta East; table 3.2, Abogeta West; table 3.3, Igoji West; table 3.4, Igoji East; table 3.5, Mitunguu Ward; and table 3.6, Nkuene Ward. Operational level managers were divided into four categories namely: nurses / clinical officers; Human Resource Information Officers (HRIO); Public Health Officers (PHO); and Laboratory Technicians (LT).

Table 3.1

Abogeta East

Hospital Type		Private				FBOs				Public				Total
		Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	
Hospital	KAnSC									1	1	1	1	4
	IG					1								1
	MW									1				1
	St. Ed					1								1
	MU									1				1
Total						2				3	1	1	1	8

Source: Author, 2020

Table 3.2

Abogeta West

Hospital Type		Private				FBOs				Public				Total
Manager Category	Hospital	Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	
			Koi Dis									1		
	Icho Clin	1												1
	St. Jam					1								1
	Men Dis									1				1
	Ithi Dis									1			1	2
	Ngo Dsi									1				1
	Total	1				1				4			1	7

Source: Author, 2020

Table 3.3

Igoji West

Hospital Type		Private				FBOs				Public				Total
Manager Category	Hospital	Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	
			Kair Dis									1		
	Kiam Dis									1				1
	Mut Dis									1				1
	Kian Dis									1				1
	Nku Dis					1			1					2
	St. Ann Mat					1	1		1					3
	Kar Dis									1				1
	Kin Sc									1	1	1		3
	Gil Clin	1												1
	Total	1				2	1		2	6	1	1		14

Source: Author, 2020

Table 3.4***Igoji East***

Hospital Type		Private				FBOs				Public				Total
		Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	
Manager Category		Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	Total
Hospita	Kye Dis									1				1
	Mwe Dis									1			1	2
	Giit Dis									1				1
	- Kat Dis									1				1
Total										4			1	5

Source: Author, 2020

Table 3.5***Mitunguu Ward***

Hospital Type		Private				FBOs				Public				Total
		Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	
Manager Category		Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	Total
Hospital	Mit NH									1		1	1	3
	Mit Dis									1		1		2
	Kir Dis									1		1		2
Total										3		3	1	7

Source: Author, 2020

Table 3.6*Nkuene Ward*

Hospital Type		Private				FBOs				Public				Total
		Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	Nurse	HRIO	PHO	LT	
Hospital	Uru Dis									1				1
	Kiar H/C									1			1	2
	Uku Dis				1									1
	Nka Dis									1				1
	Kar Dis									1				1
	Nte Dis									1	1			2
	Mik SC									1		1	1	3
	Nku Dis									2	1			4
	Nku Cem					1	1		1					3
	Je NH	1			2									3
	H/W Cli	2			1									3
	Total	3			3	2	1		1	8	2	1	2	23

Source: Author, 2020

3.4 Instrumentation

Researcher Based structured observation checklist was used to key in data on existing data capture and processing installations, available documents to include data registers, and information policies among key report registers to satisfy quantitative data. A structured researcher administered informant guide was used to collect key qualitative data from the HRIO respondents drawn from the 5 hospitals across 3 facility categories. Their distribution was 3 from Sub-County referral facilities, and 2 from the main faith based facilities. Structured self-administered questionnaires were applied on operational level managers to provide both quantitative and qualitative data.

3.4.1 Validity

Pretesting of the tool was conducted in conveniently sampled 5 of the similar neighboring facilities of health within Imenti Central facilities this representing 10% of the total county facilities whereby facility managers were purposively sampled and interviewed to ascertain the consistency of the data collection tool so as to provide basis of comparison in the course of actual data collection period. Reliability of the research instrument was assessed during pre-test using Cronbach's alpha coefficient analysis to ensure consistency of response was done measuring 0.98. A Cronbach's alpha coefficient greater 0.7 is considered a reliable research

instrument. The research instrument was validated by the university supervisors. During data collection and entry quality was assured by the researcher confirmed their completeness before leaving study site. Data was entered using EPIDATA version 3.1 to ensure data consistency.

3.4.2 Reliability

This is the consistency of the results. Errors were eliminated by coding the data collection instruments and practicing the system of sampling. The questions used in the study were restricted to the determined objectives. Multiple data sources were adopted to maximize authenticity. The researcher evaluated consistency of findings while consolidating daily responses and editing data at the point of generation through a cross-examination session aimed at collating findings, identifying, discussing and resolving the challenges before the subsequent days.

3.5 Methods of Data Collection

Data collection was coordinated by the researcher who engaged respondents through specific itemized response entries. This data was keyed into open and closed ended questionnaires. An observation guide was filled by the researcher in regard to all infrastructural installations, vital documents and evidence documents at unit level across all the units of organizational facilities. A section of the tool was used specifically by the HRIOs. Data collection instruments were self-administered so as to ensure a high response rate. Authority to collected data was sought by obtaining the relevant clearances (Appendix VI). These were clearances from Kenya Methodist University, County government of Meru (Department of Health) and National Commission for Science, Technology and Innovation (NACOSTI). Ethical values were observed by providing a letter of transmittal in the data collection instruments in which a consent form and participatory statements were provided.

3.6 Operational Definition of Variables

Table 3.7 below illustrates the operational definition of variables as they were applied in this study. The indicators used and the tools of data collection used are also indicated.

Table 3.7***Operational Framework***

Objectives	Independent variable	Indicators	Scales of measurement	Data collection tool(s)
To establish the influence of environmental drivers on information utilization.	Organizational values/culture	Available information capture hardware and software. Dedicated data management rooms. Existing information policies.	Categorical Binary	Structured Questionnaire Observation guide Informant guide
To establish the influence of behavioral drivers in information utilization.	Managers commitment	Reports on information based decisions. Availability of information feedback reports. Schedules of supervisory visits.	Categorical Binary	Structured Questionnaire Observation guide Informant guide
To identify the influence of technical drivers on information utilization.	Employee capacities	No of officers trained on information processing, dissemination and utilization. No of HMIS officers. Available refresher training schedules.	Categorical Binary	Structured Questionnaire Observation guide Informant guide
To determine how modalities for health information use influence information utilization.	Information demand	Availability of information delivery schedules. Availability of information guided allocations. Reports on information sharing meetings.	Binary	Structured Questionnaire Observation guide Informant guide

Source: Author, 2020

3.6.1 Model Specification

A basic multiple regression analysis was done. The equation assured a linear relationship and was specified as follows:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

The variables in the model were defined as follows:

Y → Response variable symbol representing utilization of health information for decision making by operational level managers.

β_0 → Constant term representing the vertical intercept.

$\beta_1, \beta_2, \beta_3$ and β_4 → Regression coefficients indicating the amount of change in the outcome variable to be occasioned by a unit change in the corresponding exogenous variable.

X_1 → Exogenous variable symbol representing environmental drivers.

X_2 → Exogenous variable symbol representing behavioral drivers.

X_3 → Exogenous variable symbol representing technical drivers.

X_4 → Exogenous variable symbol representing modalities of health information use.

ε → Model stochastic disturbance term (error term) accounting for other terms affecting the response variable that are not captured by the model.

3.7 Methods of Data Analysis

Data was analyzed use both descriptive and inferential analysis techniques. Descriptive analysis was done mainly for quantitative data where measures such as means, frequencies and percentages were obtained. Inferential analysis was done for both qualitative and quantitative data. Quantitative data was keyed into version 3.1 of EPIDATA then it was extracted using version 20 of SPSS for evaluation where regression and correlations analysis were conducted. Regression coefficients were obtained to so as to establish the magnitude of change in the dependent variable occasioned by a unit change in the independent variables. Spearman's correlation coefficient was used to assess the relationship between health information utilization for decision making and the independent variables. Content analysis was conducted for qualitative data to describe, interpret and draw inferences. Neuendorf (2002) defines content analysis as the systematic description of the composition of objects or materials of a study in qualitative terms. This involves observation and detailed description of objects, items or things that comprise the object of the study. In line with this, Green and Browne (2005) procedure was used in data management and analysis for data collected from key informants. In this regard, recorded interviews were transcribed word for word and then translated appropriately and used

where required. In addition, the data was organized, summarized and interpreted accordingly and inferences made. The results of the study were presented in tables, graphs and charts for dissemination through university panel, policy forums and local journals.

3.8 Ethical and Logistical Considerations

Ethical clearance was obtained from the university's Scientific Ethical and Research Commission (SERC). Clearance was also obtained from the National Commission for Science, Technology and Innovation (NACOSTI). An introductory letter was acquired from the university. Authorization was also obtained from the Meru County government and Imenti South Sub-County hospitals and other health facilities under study. The participants had provided an earlier consent to participate in the study. All procedures were adhered to at the entry, participant engagement and data handling processes. Logistical requirements were organized adequately and the researcher was committed to the collection of data in the entire duration.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

The chapter presented the outcome culminating into a discussion based on the study conducted on how decision making based on health information by operational level managers was affected by organizational drivers of health facilities in Imenti South Sub-County.

4.1 Response Rate

Sixty-four participants were sampled from the targeted population of nursing and clinical officers, medical lab technologists, health resource information officers and public health officers heading various units of peripheral facilities in Imenti South Sub-County. The response rate was as indicated table 4.1 below.

Table 4.1

Response Rate

Questionnaires	Frequency	Percent (%)
Response	62	97%
Non-response	2	3%
Total	64	100.00%

Source: Author, 2020

Participants totaling 62 successfully returned properly filled questionnaires resulting in a 97% rate of return. This particular rate of return was regarded as adequate and acceptable as guided by the opinion of Mugenda and Mugenda (1999) that a 50% response rate is adequate, a 75% response rate or more is both credible and acceptable. Specific responses from the four categories of operational level managers (nurses, HRIOs, PHOs and laboratory technologists) were as indicated in table 4.2.

Table 4.2***Specific Response***

CATEGOERY	Nurses	HRIO	PHO	LT	Total
Public	28	3	5	6	42
Private	5	0	0	3	8
FBOs	7	2	0	3	12
TOTAL	40	5	5	12	62

Source: Author, 2020

Among the participating managers from the 39 / 49 registered health facilities included 40 nursing officers, 12 lab scientists ,5PHOs & 5 HRIOs comprising 62 / 64, a 97% response rate of expected respondents within existing facilities. The study established that 7 private facilities and 3 public facilities had closed down from either deregistration or underutilization hence the aforementioned presentation.

4.2 Background Characteristics

This study targeted respondents from different health facilities with an aim to establish how decision making based on health information by operational level managers was affected by organizational drivers of health facilities in Imenti South Sub-County. The background characteristics of the respondents were as presented in table 4.3 below.

Table 4.3***Respondents' Characteristics***

Respondents' Characteristics	Category	Frequency	Percent
Gender	Female	33	53%
	Male	29	47%
Age	31-40	32	52%
	51-60	18	29%
	41-50	12	19%
Highest level of education completed	Diploma	43	69%
	Degree	13	21%
	Masters	6	10%
Profession	Nurse	43	69%
	Lab scientist	11	18%
	HRIO	4	6%
	Lab Technician	2	3%
	SPHA	1	2%
	PHO	1	2%
Number of years in profession	1-10	29	47%
	11-20	16	26%
	21-30	9	15%
	31-40	8	12%
Health facility type	H/center	29	47%
	Dispensary	21	34%
	Sub county hospital	9	14%
	hospital		
	County hospital	3	5%

Source: Author, 2020

The respondents comprised of 41.1% males and 58.9% females with majority being in the age group of 31 to 40 years as represented by 52% in the table above. In regards to the level of education attained by the respondents, majority had a diploma (76.8%), 21% had a degree while the remaining 10% had achieved masters level of education. the majority of the respondents in the study (69.6%) were nurses (69.6%), while another significant group were lab scientists represented by 18% as illustrated in the table above.

In regards to the period the respondents had been in their current professions, majority (47%) indicated between one and ten years, while 26% said between 11 and 20 years and 27% saying above 21 years of experience. This illustrates that the information gained from the research would be provided by respondents with adequate knowledge of their area of profession. The majority of the respondents (47%) were from health centers, 34% from dispensaries and 19% from County and Sub-County hospitals.

4.3 Environmental Drivers

The researcher sought to find out how environmental drivers of hospitals in Imenti South Sub-County impact the use of information related to health in the making of decisions by operational level managers.

4.3.1 Information Culture and Use

The researcher sought to establish whether the respondents had any data control systems in their respective facilities. The results obtained were as depicted in table 4.4.

Table 4.4

Data Control Systems in Health Facilities

Response	Frequency	Percentage
Yes	43	69
No	19	31
Total	62	100

Source: Author, 2020

The results indicated that 69% agreed that there were data control systems in their respective facility while 31% disagreed. This finding differs from earlier findings by MOH (2003) that most of the data generated in health facilities in Kenya did not have well-coordinated and maintained uniform systems to integrate and implement the management of information and data within all levels indicating that there has been an increase in the establishment of data control systems in health facilities. The study further sought to establish how the data control systems are used and established the results in table 4.5.

Table 4.5***Use of Data Control Systems in Health Facilities***

Use of Data control system	Response	Frequency	Percentage
To maintain data quality	Yes	43	69
	No	19	31
To provide data security	Yes	54	87
	No	8	13

Source: Author, 2020

The results indicate that 43(69) agreed that data control systems were used to maintain data quality while 19(31) disagreed. On the other hand, 54(87) agreed that data control systems were used to provide data security while 8(13) disagreed. This indicates that the different facilities sampled in the study have similar uses for the data control systems which include ensuring security and quality of the data as also indicated by Seitio-Kgokwe et al. (2015) who note that data quality and security are important aspects for a facility's performance that should be maintained routinely.

There are a couple of particular reasons as to the importance of establishing data control systems. Firstly, gathering and disseminating information on the prevalence of diseases as well as the assessment of healthcare and evaluation of services and products. Furthermore, there is a discerning need to protect the information collected to avoid causing particular harm to individuals and institutions (Kihuba et al., 2014).

4.3.2 Regulation of Data Generation and Dissemination

The researcher sought to establish the personnel that were in charge of regulation of data generation and dissemination. The outcome was as shown in table 4.6.

Table 4.6***Regulation of Data Generation and Dissemination***

Response	Frequency	Percentage
Appointed management teams	23	37
HMIS officers	39	63
Total	62	100

Source: Author, 2020

The results indicated that 37% of the respondents said that regulation of data was done by appointed management teams while 63% indicated that it was the role of HMIS officers.

According to Seitio-Kgokwe et al. (2015), the intended officers and the procedures involved in HMIS encompass orderly harmonization of the collected data (input) on health, storing, accessing and utilization to enable the decision making process to be based on evidence and intervention.

Making of decisions basically encompass aspects of management which include organizing, planning and governance of health institutions within the level of the institution and nationally, together with aspects of clinical whose aim is to offer care of patient optimally. Moreover, records that are correct, dependable, absolute and current are needed by health officers at the district and the health ministry in observing and assessing indicators of public health, which includes finances that are available, status of equipment's, trends of consumptions, stock of drugs, utilities and coverage, provision of services, and demography.

4.3.3 Evaluation of Health Facility Policy on Utilization of Health Information

The results on whether the health facilities sampled had existing policy for data quality standards were obtained and gave the results in table 4.7 below.

Table 4.7

Existence of Policy for Data Quality Standards

Response	Frequency	Percentage
Strongly disagree	7	10.5
Disagree	48	77
Not sure	1	1.8
Agree	7	10.7
Strongly Agree	0	0
Total	62	100

Source: Author, 2020

Results indicates that 87.5% disagreed that there is a policy for data quality standards in their respective facilities, 1.8% were not sure while only 10.7% agreed. Health facilities have therefore been indicated to not have been set up and implemented sufficient policies to ensure data quality, coinciding with findings by WHO (2008) that failure to create and implement a policy framework documents is among the major environmental impediments to functional health information systems.

According to the Health Information System policy, the introduction of the Health Information and Management Information System was as a result of weak and traditional institutional frameworks. To reiterate Cheburet and Otieno (2016), efficiently and effective administered in

regards to the standards of the generated data which is essential in making policies, drafting, assessing the health results and decisions being made based on evidence.

The researcher went on to find out whether schedules of periodic data audit were available in the health facilities. The resulting outcome was captured in table 4.8.

Table 4.8
Availability of Schedules on Periodic Data Audit

Response	Frequency	Percentage
Strongly disagree	13	21
Disagree	41	66.5
Not sure	0	0
Agree	7	10.7
Strongly Agree	1	2
Total	62	100

Source: Author, 2020

It was found that 87.5% disagreed that there are available schedules on periodic data audit while 12.5% agreed. This indicates that few health facilities represented in the study audited their information systems and thus likely to negatively affect the quality and relevance of information that can be used to make decisions. This is also noted by Seitio-Kgokwe et al. (2015) that health management should audit data quality routinely and update HRIOs so as to protect its quality and relevance. Health facilities are responsible for the health outcomes of their clients and patients; therefore, they must employ efficient monitoring and evaluation frameworks that help make informed decisions in resource deployment (USAID).

Concerning the availability of audit tools in the health facilities of Imenti South Sub-County, the study gave the results in table 4.9.

Table 4.9
Availability of Audit Tools

Response	Frequency	Percentage
Strongly disagree	10	15.6
Disagree	47	75.5
Not sure	0	0
Agree	4	6
Strongly Agree	2	2.9
Total	62	100

Source: Author, 2020

91.1% disagreed that there are audit tools in place while 8.9% agreed indicative of the lack of routine data auditing for lack of sufficient tools as recommended by Seitio-Kgokwe et al. (2015). A lack of auditing tools in an organization is an indication of the lack of prioritizing auditing practices. Such situations do not provide room for improvement as management lacks the proper information on which it can benchmark its key performance indicators.

The researcher further sought to ascertain whether there was existing evidence of previous audited reports in the health facilities. The results obtained were as shown in table 4.10.

Table 4.10

Existing Evidence of Previous Audited Reports

Response	Frequency	Percentage
Strongly disagree	6	10.3
Disagree	49	79
Not sure	0	0
Agree	5	8
Strongly Agree	2	2.7
Total	62	100

Source: Author, 2020

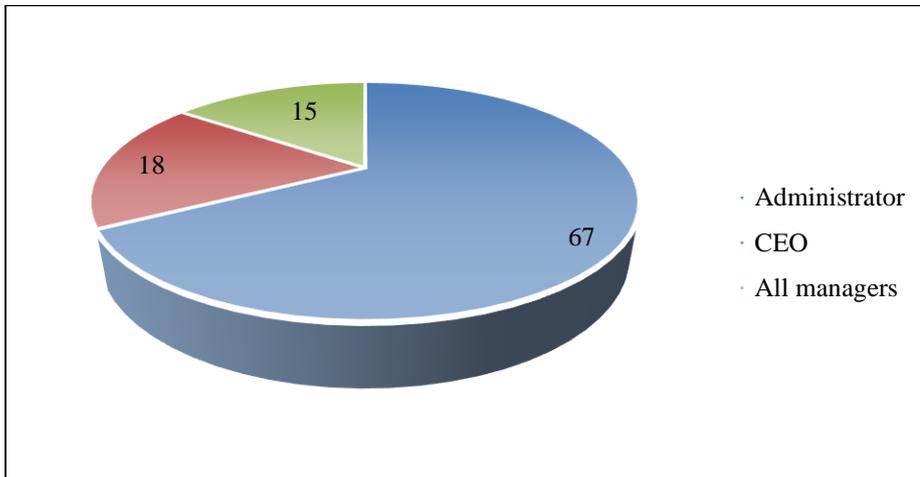
89.3% disagreed while 10.7% agreed that there is existing evidence of previous audited reports. The results indicate that managers and other employees within health care don't often put into good use the collected data as supported by 89% on the statement that there is existing evidence of previous audited reports. These findings were in line with Galimoto (2007) who opines that notwithstanding the HIS training, managers and staff of healthcare don't regularly put into good use the collected data. Observable is the reporting tradition instead of that of using information. The culture of underutilizing information in the process of making decisions is characterized at the level of the facility among many developing nations, also within senior health staff. Although most districts exhibited accuracy in data collection and analysis with regularly providing outcomes to facilities and administration, did not embrace a tradition of utilizing information. The study revealed wide variation in tradition of data use, among districts studied varying styles of management within the same culture of the organization.

4.3.4 Information Recipient

The researcher sought to establish the information recipient at the facility and obtained the results in figure 4.1.

Figure 4.1

Information Recipient



Source: Author, 2020

The results indicated that administrators received the information as indicated by 42(67%), 11(18%) were for CEO while 9(15%) indicated all managers. This indicates that the top decision makers in the institution are provided with data from different health institutions and have the essential component on which they can base their decisions. The receiving of information however, does not mean that the information generated through the health facilities in the sub-county is used in the making of decisions.

4.3.5 Purpose of the Data Generated

The study sought to establish the purpose of the data generated. This gave the results in table 4.11 below.

Table 4.11

Purpose of the Data Generated

Statement	Frequency	Percentage
To satisfy routine exercise	35	56%
To satisfy donor requirements	24	39%
For healthcare decisions	3	5%
Total	62	100

Source: Author, 2020

The results indicated that 35(56%) were for the idea that the purpose of data generated was to satisfy routine exercise. On the other hand, 24(39%) indicated that data generated was meant

to satisfy donor requirements while 3(5%) was for healthcare decisions. It is evident that data generated at the healthcare facilities was meant to satisfy routine exercise as supported by 57% of the respondents as also found by Moyo (2005) that few facilities use HIS findings for decision making. Coined by Seitio-Kgokwe et al. (2015) population-based information plays a role even in the most general form of tracking health systems. Absence of coordination may lead to duplication of efforts and unnecessary competition between health providers and data collecting units. The lack of using the generated data in making decisions means that most of the decisions that are made at the top management level are not evidenced based as most of the data will provide information on the practices that have been implemented previously and in other health facilities.

4.3.6 ICT Networks Across all the County Facilities

The level of ICT networks across all the county facilities was sought by the researcher with the outcome being as recorded in table 4.12.

Table 4.12

ICT Networks Across all the Sub-County Facilities

	Agree		Disagree	
	Frequency	Percentage	Frequency	Percentage
All facilities connected	4	6	58	94
A few connected	57	93	5	7
None connected	7	12	55	88

Source: Author, 2020

The results indicated that 94% of the sampled respondents disagreed that all facilities were connected with ICT networks across the county, while 93% agreed that only a few were connected indicating that there was a low connectivity of ICT networks across the county facilities. This finding is in tandem with findings by Carbone (2009) that majority of the health facilities across developing countries have stationary materials like paper and pen but a shortage of IT equipment like computer, internet or any kinds of network.

4.3.7 Availability of ICT Networks

Regarding the availability of ICT networks in the health facilities, the study yielded results shown in table 4.13.

Table 4.13*All Facilities have Adequate and Functional Computers.*

Response	Frequency	Percentage
Strongly disagree	36	58
Disagree	26	42
Not sure	0	0
Agree	0	0
Strongly agree	0	0
Total	62	100

Source: Author, 2020

The results indicated that 58% of the respondents strongly disagreed while 42% of the respondents disagreed to an extent that all facility units have adequate and functional computers. According to the International Monetary Fund [IMF] (IMF, 2006), the availability of external financing and administration capacity had been the major hindrance in utilization of health information. This is captured by the purchase and allocation of systems and hardware such as EHR systems and computers in the finance and accounting modules as an essential feature. MOH has also observed that there is limited access to technological infrastructure across counties, sitting that the dilapidated structures and poor maintenance is coupled by the fact that institutions allocate investments to physical infrastructure rather than medical technologies. These observations have been echoed by Seitio-Kgokwe et al. (2015) who argued that the lack of hardware and infrastructure has mired the implementation of certain modules within the facilities.

On whether all data capture software for various pillar components were available in the health facilities, analysis of data provided the following results in tale 4.14.

Table 4.14*All Data Capture Software for Various Pillar Components Are Available*

Response	Frequency	Percentage
Strongly disagree	18	29
Disagree	33	53
Not sure	0	0
Agree	7	11
Strongly agree	4	7
Total	62	100

Source: Author, 2020

The results illustrate that a combined 82% disagreed that all data capture software for various pillar components in their respective health facilities are available while only 19% agreed. This further illustrates the need for data capture and processing devices. According to Kenya’s first medium term plan (2008-2012) it was established that an urgent need to integrate information systems into health facilities across the nation was fundamental in the race to utilize the data available, however, the low investment on the HIS has hindered the implementation and stability of strategies setting back facilities in the county level from integration.

According to Seitio-Kgokwe et al. (2015), utilization of information should be strengthened throughout the pillars of the health facilities, by augmenting a tradition of using data and information as a decision-making tool. The findings also show that by adopting effective and productive health information systems we are inclined to see an increase in the quality of service delivery in the healthcare system. The various pillars, leadership and HIS, finance and the workforce as well as health products and technologies permit a coherent approach in strengthening the health system. According to WHO, monitoring and evaluation structures integrating the aforementioned pillars brings together data sources and results in its entirety.

Networking of main hospitals with the lower level health facilities was established and the results obtained were as seen in table 4.15.

Table 4.15

Networking of Main Hospitals with the Lower Health Facilities

Response	Frequency	Percentage
Strongly disagree	26	42
Disagree	31	50
Not sure	0	0
Agree	5	8
Strongly agree	0	0
Total	62	100

Source: Author, 2020

The results presented above indicate that a cumulative 92% disagreed while 8% agreed that networking of main hospitals with the lower Health facilities is established indicating that information sharing between health facilities in the county was not automated. The growing demand to integrate information systems cross cutting various facilities in the county and national level, has given rise to various modules of eHealth in a bid to improve health and health system challenges.

The findings above show that facilities that are privy to the growth of information and technology in Kenya have adopted novel eHealth projects. According to the Ministry of Health in Kenya, an interoperable health information system, mHealth, has been introduced as a sustainable solution that benefits clients and health care workers in addressing their needs in a cohesive and effective manner. However, Martin et al points out that as much as the integrated system exist, there are challenges of financial pressures to attain the hardware as well as financially sustain the information software, thus leaving pull of geographical inequities.

4.4 Behavioral Drivers

The researcher sought to determine the manner in which behavioral drivers of hospitals in Imenti South Sub-County guide the use of health information in making decisions by operational level managers.

4.4.1 Information Feedback Influence on Information Use

Analysis on the use of health data for decision making in the health facilities yielded the results in table 4.16.

Table 4.16

Use of Data for Decision Making

Response	Frequency	Percentage
Strongly disagree	7	11.3
Disagree	32	51.6
Not sure	18	29.0
Agree	5	8.1
Strongly agree	0	0.0
Total	62	100.0

Source: Author, 2020

The results indicated that 63% of the respondents disagreed that data generated in their respective facility is used for decision-making, while only 8% agreed. This shows that there is a limited utilization of the facility’s generated data in making decisions as also found by Lippeveld et al. (2000) indicating that there may be a continuous culture of non-prioritizing health information across health facilities.

According to Odhiambo-Otieno (2005) it is crucial that senior managers adopt and promote making decisions that is based on evidence as a pillar in the administration of the facility. Fostering a culture of utilizing health information systems advocates for transparency and

accountability in dissemination of data.

Further analysis on data concerns sought to establish whether there was routine feedback on information quality in the health facilities. This provided the results in table 4.17 below.

Table 4.17

Routine Feedback on Information Quality

Response	Frequency	Percentage
Strongly disagree	12	19.4
Disagree	28	45.2
Not sure	14	22.6
Agree	6	9.7
Strongly agree	2	3.2
Total	62	100.0

Source: Author, 2020

The results presented above indicate that 65% of the respondents disagreed that there is routine feedback on information quality, 22% said they were not sure while 13% agreed that there was routine feedback. This finding coincides with earlier findings by the MoH (2009) that there was very little routine feedback across various health system levels due to lack of systemized mechanisms. Professionals in health care dedicate a considerable amount of their time while working in the acquisition of enormous amounts of patient and client data that is less often evaluated and utilized at the collection point. The mere collection, summative and passing of the data collected is what sets facilities apart in the feedback process. According to WHO (2008), the data collected by the health workers is rarely generated by the health system managers.

It was also established whether there was timely dissemination of information feedback in the health facilities. The resulting outcome was as indicated in table 4.18.

Table 4.18***Timely Dissemination of Information Feedback***

Response	Frequency	Percentage
Strongly disagree	15	24.2
Disagree	27	43.5
Not sure	10	16.1
Agree	5	8.1
Strongly agree	5	8.1
Total	62	100.0

Source: Author, 2020

The study outcomes show that 67% of the participants disagreed that there is timely dissemination of information feedback in their respective health facilities, 16% were not sure while another 17% agreed indicating that majority of the health facilities would not manage to support routine information utilization as suggested by Chaled et al. (2013) that timely dissemination of reports and prompt data sharing serves as excellent means of routine information utilization. Further, to verify whether the approach for delivering feedback was satisfactory, analysis was done and yielded the results in table 4.19 below.

Table 4.19***Satisfactory Approach for Delivering Feedback***

Response	Frequency	Percentage
Strongly disagree	12	19.4
Disagree	29	46.8
Not sure	17	27.4
Agree	4	6.5
Strongly agree	0	0.0
Total	62	100.0

Source: Author, 2020

The data presented above indicates that 67% of the respondents when asked whether the approach used for delivering feedback in their health facilities is satisfactory disagreed, 28% were not sure while 4(6%) agreed. These findings were in line with Chaled et al. (2013) who noted that regular user of information require competence, confidence, and motivation in accomplishing their chores that directly impact the system processes and performance. They also added that an employee's feeling regarding the outcome and utility of the results of the

activity in relation to the activity's complication should be considered.

4.4.2 Manager's Attitude and Information Use

The researcher sought to establish manager's attitude and information use in the health facilities. Analysis gave the results in table 4.20.

Table 4.20

Manager's Attitude towards Quality of Health Information

Response	Frequency	Percentage
Strongly disagree	15	24.2
Disagree	33	53.2
Not sure	8	12.9
Agree	4	6.5
Strongly agree	2	3.2
Total	62	100.0

Source: Author, 2020

The results presented above show that 77% of the respondents disagreed that managers consider health information produced in their hospital to be of quality, 12% were neutral while 8% agreed. This means that the utilization of health data in making decisions is restricted as also found previously by Odhiambo-Otieno, (2005) that when senior employees lack evidence in making decisions and in the utilization of information in regards to accountability and transparency, followed by a tradition of not using information.

Owing to the negative view of managers toward the use of health information as a decision-making tool, it was recorded by Seitio-Kgokwe et al. (2015) that resistance in the implementation of health information systems took a variety of forms, from the simple attempts to minimize the use of systems to extensive criticism of the systems. In this study, analysis on managers' attitude towards necessity of information in decision making gave the results in table 4.21.

Table 4.21***Managers Consider Information Necessary in Making Decisions***

Response	Frequency	Percentage
Strongly disagree	19	30.6
Disagree	25	40.3
Not sure	7	11.3
Agree	4	6.5
Strongly agree	7	11.3
Total	62	100.0

Source: Author, 2020

The data presented above shows that participants totaling 71% were not in agreement that managers consider health information produced in their respective hospitals absolutely necessary in making of key crucial organizational decisions, 12% indicated they were not sure while 17% agreed. These findings divulged that majority of the managers in the health facilities in the sub County would not be motivated to utilize the outputted data in the facilities of health care in making decisions due to their negative perceptions and attitudes as also found by Odhiambo-Otieno, (2005) who indicates that attitude and views of senior staffers in regards to the execution and design of HIS have a role to play in influencing the utilization of HIS. It is also observed that a negative attitude among health workers towards data collection translates into resource misuse hence detrimental to data quality.

4.5 Technical Drivers

The following section entails analysis with regard to establishing how technical drivers of hospitals in Imenti South Sub-County affected the use of information related to health in making decisions by operational level managers. To begin with, the researcher sought to determine whether there were schedules on job training on data management in the health facilities. The results were as indicated in table 4.22.

Table 4.22***Presence of Schedules on Job Training on Data Management***

Response	Frequency	Percentage (%)
Strongly disagree	14	23
Disagree	7	11
Not sure	5	8
Agree	20	32
Strongly agree	16	26
Total	62	100

Source: Author, 2020

The results indicated that 34% of the respondents when asked whether they had a schedule of refresher on job training on data management in their health facilities disagreed while 58% agreed. This indicates that training was part of the organizations culture and is entrenched within the policy or planning framework.

According to Seitio-Kgokwe et al. (2015), in order to produce better communication products, training in analytics at the county and national level should be considered in order to strengthen the capacity in utilizing health management information systems. The findings show that there is an increase in utilizing data information for decision making, which strengthens the utilization of information at all levels of the system.

The study also sought to establish whether the managers had undergone training in various data categories in their health facilities and obtained the results in table 4.23.

Table 4.23***Respondents Undergone Training in Various Data Categories***

Response	Frequency	Percentage (%)
Strongly disagree	22	36
Disagree	13	21
Not sure	11	18
Strongly agree	6	10
Agree	9	15
Total	62	100

Source: Author, 2020

The findings also show that in regards to undergoing training on various data categories, majority of the respondents (57%) disagreed, 18% were not sure while 25% agreed indicating that there were low levels of training as also found by Lippeveld et al. (2000) that there existed

in many health facilities inadequate training of employees in regards to analysis of data, is comprehension and finally its utilization within all levels of the facilities.

According to Williamson and Stoops (2001) managers lack the skills and knowledge on interpretation of information data, analysis, data processing among various data categories, this causes a hindrance in their ability to problem solve. Continuity can be increased through involving all parties, that is, personal, physical resources among others to effectively utilize the information systems.

On checking whether there was evidence of planned training schedules in the health facilities, the findings were as given in table 4.24 below.

Table 4.24
Evidence of Planned Training Schedules

Response	Frequency	Percentage (%)
Strongly disagree	7	12
Disagree	9	15
Not sure	11	18
Agree	6	10
Strongly agree	16	25
Total	62	100

Source: Author, 2020

The finding above illustrated that a cumulative 27% of respondents disagreed that they had any planned training schedules, while 18% were not sure. It was indicated however that 35% of respondents acknowledged to have a planned training schedule in the facilities. These findings were in line with LaFond and Fields (2003) employing an approach/schedule that is based on enhancing technical standards, improving personnel capacity in comprehending and utilizing data will result to production that is sustainable and effective utilization of health information standards.

The final component in the technical drivers involved establishing whether managers had received in training on data components and utilization for decision making in their facilities. This yielded the results depicted in table 4.25.

Table 4.25

Trained on Data Components and Utilization

Response	Frequency	Percentage (%)
Strongly disagree	12	20
Disagree	9	15
Not sure	7	12
Agree	16	25
Strongly agree	17	28
Total	62	100

Source: Author, 2020

The findings presented above also illustrate that 35% disagreed while 53% agreed when asked whether they are trained on data components and utilization. These findings were in line with Williamson and Stoops (2001) limited knowledge and skills of the managers on data processing, analysis, and interpretation, results into their inability to use health information thus posing an impediment to their problem-solving abilities.

4.6 Modalities of Health Information Use

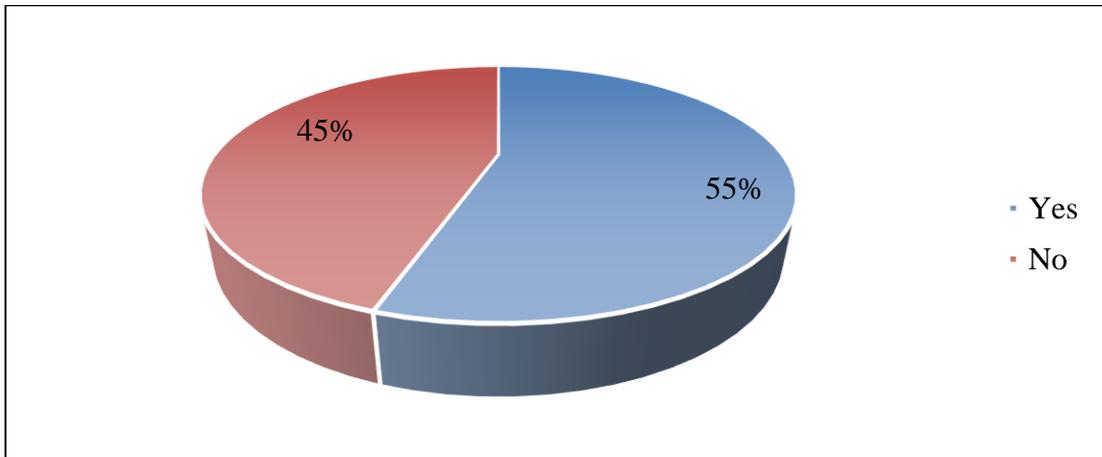
The study aimed to establish the modalities of health information use for decision making by operational level managers of Imenti South Sub-County Hospitals.

4.6.1 Data Generated and Decision Making

The generated data was sought to be established if it was being utilized in making decisions in the respective health facilities. The results thereof were as shown in figure 4.2 below.

Figure 4.2

Data Generated and Decision Making



Source: Author, 2020

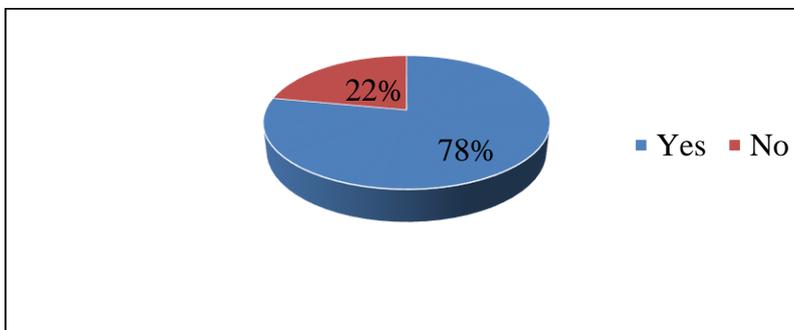
The results indicated that majority of the respondents, 55%, agreed that the data generated in their health institution was used for decision making while 45% disagreed. This illustrates that there is still a significant portion of the health facilities that do not use their generated data for decision making.

4.6.2 Information Collection

The study sought to find out whether all departmental managers collect information on timed schedules and on demand. Figure 4.3 shows the results.

Figure 4.3

Information Collection



Source: Author, 2020

The results presented in the figure above showed that 78% agreed while 22% disagreed that

their managers collected information on timed schedules and on demand. This means that the health institutions are aware of the need to generate data from the daily practices and that systems have been set so as to guarantee that the data is generated within the healthcare facility.

4.7 Multivariate Analysis

To establish how well the model fit the data obtained to explain the variation in the dependent variable, model statistics for goodness-of-fit were obtained, giving the results indicated in table 4.26 below.

Table 4.26

Goodness-of-Fit Model Statistics

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.654 ^a	.442	.403	.1643	1.341

a. Predictors: (Constant), Environmental Drivers, Behavioral Drivers, Technical Drivers and Modalities of Health information use

Source: Author, 2020

Shown in table 4.26 is a good linear relation linking the independent variable with the dependent variable as utilized in this study i.e. between health information use and organizational attributes. A 0.654 correlation coefficient is therefore derived by the study. A moderately strong association is presented by an adjusted R-square which has measured the coefficient linking the provided independent variable and the dependent variable show by a 0.403 value. The model accounts are portrayed as 40.3% of the aggregate observation while the regression model is unable to explain the remaining 44.2%. The residual of the model was tested preliminary for autocorrelation in regression using the test by Durbin Watson. A value of closer to 2 (1.341) was shown on the Durbin Watson test, which meant that the residual of the model had no autocorrelation. The model indicates that there is a low discrepancy between the observed values in the study's variables and those that would be expected of the model in a normal distribution case. In this case the variables in relation to the organization factors influencing utilization of health information.

To establish the overall significance of the regression model adopted, and to verify that the explanatory variables in the model were indeed associated with the variation in the response

variable, analysis of variance was determined. This gave the results indicated in table 4.27 below.

Table 4.27

Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.132	4	.231	5.022	.000 ^a
	Residual	8.431	57	.046		
	Total	10.563	61			

a. Predictors: (Constant), Environmental Drivers, Behavioral Drivers, Technical Drivers and Modalities of Health information use

b. Dependent Variable: Utilization of Health information

Source: Author, 2020

The table above presented the statistics according to ANOVA, which were considered in presenting the significance of the regression model. An F-significance value of $P = 0.000$ was established. This value was less 0.001 (that is $P < 0.001$) showing that there the model was statistically significant. Therefore, there was a significant linear relationship between utilization of health information for decision making and the four explanatory variables in the model.

The multiple regression analysis gave rise to the following regression coefficients indicated in table 4.28.

Table 4.28***Regression Coefficients***

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	T	
(Constant)	4.321	.425		8.545	.000
Environmental Drivers	.621	.154	.656	5.574	.000
Behavioral Drivers	.562	.874	.241	2.486	.000
Technical Drivers	.368	.441	.282	1.031	.000
Modalities of Health information use	.532	.685	.257	2.412	.000

a. Dependent Variable: utilization of health information

Source: Author, 2020

The study obtained the regression outcome as follows:

$$Y = 4.321 + 0.621X_1 + 0.562X_2 + 0.368X_3 + 0.532X_4$$

From the model, holding constant environmental drivers, behavioral drivers, technical drivers and modalities of health information use, the utilization of health information will be 4.321. Holding other factors constant, a unit increase in environmental drivers would lead to a 0.621 ($\beta_1 = 0.621$) increase in utilization of health information. However, holding other factors constant, a unit increase in behavioral drivers would lead to a 0.562 ($\beta_2 = 0.562$) increase in utilization of health information. The table above also shows that holding other factors constant, a unit increase in technical drivers would lead to a 0.368 ($\beta_3 = 0.368$) increase in utilization of health information. Finally, a unit increase in modalities of health information use would lead to a 0.532 ($\beta_4 = 0.532$) increase in utilization of health information.

4.8 Correlation Analysis (Summary)

The study sought to find out how environmental drivers of health facilities in the study area impacted health information use in making decisions by operational level staffers. An analysis using Pearson correlation was utilized to attain the outcome of ninety-nine percent and a confidence level of ninety-five percent. The hypothesis of the study was tested by enabling the correlation analysis showing that there was a considerable influence of health information use in making decisions by operational level managers. Table 4.29 below divulges a positive yet good linear association linking Environmental Drivers and: Behavioral Drivers ($R = 0.772$; $P = 0.49$), Technical Drivers ($R = 0.984$; $P < 0.001$) Modalities of Health

information use ($R = 0.603; P < 0.001$).

Table 4.29
Correlation Analysis

		Environmental Drivers	Behavioral Drivers	Technical Drivers	Modalities of Health information use
Environmental Drivers	Pearson Correlation	1			
	Sig. (2-tailed)				
Behavioral Drivers	Pearson Correlation	.811*	1		
	Sig. (2-tailed)	.033			
Technical Drivers	Pearson Correlation	.772*	.975	1	
	Sig. (2-tailed)	.049	.091		
Modalities of Health information use	Pearson Correlation	.984**	.008	.049	1
	Sig. (2-tailed)	.000	.033	.021	.018

Correlation is significant at the 0.05 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed).

Source: Author, 2020

The table above presents the strengths of the relationship of the variables in the study. The table indicates that the variables have a strong relationship between each other as most of the values computed are between 0.7 and 1.0. Thus, their relationship to the utilization of health information is positive.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter provides the conclusions and recommendations made based on the findings of the study. The chapter begins with a summary of the research done. Conclusions are then made from the major findings of the study based on the research objectives. The chapter then provides a summary of key recommendations that were made from the findings that would be necessary to make organizational drivers contribute more in the decision making process in health facilities via utilization of information. The final section of the chapter gives recommendations for future research that can be conducted on the subject under study for more insights and building on the knowledge thereof.

5.1 Summary of Findings

The study sought to collect data from 64 participants from health facilities in Imenti South Sub-County. The response rate was 97% of whom majority were nurses and more than half of the sample were females, having mostly diplomas and having between one and ten years of experience in their current professions.

5.1.1 Environmental Drivers for Utilization of Health Information

In regards to the first objective of the study that was to describe the influence of environmental drivers on utilization of health information for decision-making, the study found that majority of the health facilities had data control systems which were mostly used for providing data security and maintaining data quality. These components are essential in establishing quality and security features which enhances utilization of health data. The study also found that in most of the health facilities, the HMIS officers were in charge of the regulation of data generation and dissemination. The majority of health facilities were also found to lack existing policies on data quality standards and thus would not maintain quality data that could be relevant for decision making. The study however found that majority of the health facilities did not have scheduled data audit and audit tools available which limits the quality and relevance of the generated data.

The study also established that majority of the data generated by the facilities is received by administrators and that among uses of data was to satisfy routine practices with negligible proportion going to satisfy system decisions. The findings show that the culture of information

use was limited across several health facilities from the sub-county. The study also found that ICT devices were not adequate in most of the health facilities and the lack of connectivity between health facilities at different levels inhibited the level of data sharing and usage for decision making purposes.

5.1.2 Behavioral Drivers for Utilization of Health Information

In regards to the study's second objective which was to determine the influence of behavioral drivers on utilization of health information for decision-making, the study found that there were low levels of routine feedback on information quality across the health facilities in the sub county and lack of timely dissemination of information feedback which limited the utilization of health information for decision making. The study also found that majority of the respondents representing different health facilities within the sub county were not satisfied with the approach for delivering feedback in their respective health facilities. In regards to the managers' attitudes, the researcher found that the perceptions about the quality of data generated in the health facility was that it was not quality and unnecessary information and thus would not be used in decision making.

5.1.3 Technical Drivers for Utilization of Health Information

In relation to the third objective that was to establish the influence of technical drivers on utilization of health information for decision-making, the study found that there were schedules for on-the job training for staff but not specific to the various data categories and therefore not relevant to utilization of health data in decision making. In addition, the study found that while there was evidence of training on data components and utilization, there was still a significant proportion of the respondents having not received any training. This means that the technical capacities needed for utilization of health information in decision making is still limited.

5.1.4 Modalities of Health Information use for Decision Making

In relation to the fourth objective of the study that was on describing the modalities of health information use for decision making, the study found that while majority of the facilities used their generated data for decision making, a significant portion did not. The study also found that information collection was conducted using timed schedules and on demand by managers in the health facilities.

5.2 Conclusions

5.2.1 Environmental Drivers for Utilization of Health Information

The health facilities in Imenti South Sub-County have the essential components in regards to data control systems which provide data security and maintaining data quality and enhances utilization of health data. Health facilities also have the proper structure in regard to the personnel for regulation of data but lacks existing policies on data quality standards hence compromising data quality that could be relevant for decision making. However, the lack of crucial ICT components such as computers, lack of scheduled data audit and audit tools, and culture of using data to satisfy routine practices limits the utilization of health information in the health facilities.

5.2.2 Behavioral Drivers for Utilization of Health Information

The managers' negative attitudes and perceptions have a significant negative influence on utilization of health information in addition to the low levels of routine feedback on information quality across the health facilities in the sub-county and lack of timely dissemination of information feedback. In institutions where the managers perceive the information generated in their facilities as having quality and relevance, the use of the health data in decision making is significantly higher.

5.2.3 Technical Drivers for Utilization of Health Information

The existence of schedules for on-the job training for staff and evidence of training on data components and utilization are components that can improve the utilization of health information but limited in the health facilities in Imenti South Sub-County. Health facilities that have more staff trained in data generation and the different tools available for collection and dissemination evidently perform better in reference to their utilization of health information.

5.2.4 Modalities of Health Information use for Decision Making

Generated data from health facilities which is collected using timed schedules and on demand by managers is used for decision making in some of the health facilities. The application is however not existent in a significant number of the health facilities. The health system is also limited in its ability to provide a clear and evidence based assessment of the health sector's ability to improve the health status of residents in Imenti South Sub-County.

5.3 Recommendations

5.3.1 Environmental Drivers

Managers of the health facilities in Imenti South Sub-County should invest in crucial ICT components that will enhance data security and maintaining data quality and in turn make the data relevant to the decision making process. Health facilities should also have scheduled data audit and audit tools, and enhance the culture of using data to in decision making rather than for satisfying routine practices. The county government should also distribute National Health Information Policy to all facilities and orient health officers on the importance of health data and information essentials in decision making.

5.3.2 Behavioral Drivers

Health facilities should focus on improving the managers' attitudes and perceptions towards utilization of health information and levels of routine feedback on information quality through training and application through a systematic approach. The approach for delivering feedback should be also being enhanced so as to increase support from the health workers in the facilities.

5.3.3 Technical Drivers for Utilization of Health Information

The health facilities in the sub county should enhance the on-the job training for staff to include specific focus on various data categories to improve the relevance of data generated in the facilities. The county government should also deploy trained HRIO to all county facilities for quality data capture analysis, sharing and utilization.

5.3.4 Modalities of Health Information use for Decision Making

Health facilities should use timed schedules and on demand data collection approaches so as to ensure that the data generated in the health facilities can be used for decision making. The county government should therefore distribute a policy on health information and train all employees on information processes and associated importance in making health related decisions.

5.4 Recommendation for Future Research

The present study was based on establishing how decision making based on health information by operational level managers was affected by organizational drivers of health facilities in Imenti South Sub-County. The study revealed significance influence from the studied drivers. Bearing in mind that investment choices are made by organizational managers, future research should be carried on the enablers of information investments among managers across the entire organization levels of health system.

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APPENDICES

Appendix I: Client Consent Form

Dear Respondent,

My name is **Francis Kimathi Thuranira**. I am an Msc student from Kenya Methodist University. **Influence of Organizational Drivers on utilization of Health Information for management's decision making.** The findings will be utilized to strengthen the health systems in Kenya and other Low-in- come countries in Africa. As a result, countries, communities and individuals will benefit from improved quality of healthcare services. This research proposal is critical to strengthening health systems as it will generate new knowledge in this area that will inform decision makers to make decisions that are research based.

Procedure to be followed

Participation in this study will require that I ask you some questions and also access all the hospital's department to address the six pillars of the health system. I will record the information from you in a questionnaire check list. You have the right to refuse participation in this study. You will not be penalized nor victimized for not joining the study and your decision will not be used against you nor affect you at your place of employment. Please remember that participation in the study is voluntary. You may ask questions related to the study at any time. You may refuse to respond to any questions and you may stop an interview at any time. You may also stop being in the study at any time without any consequences to the services you are rendering.

Discomforts and risks

Some of the questions you will be asked are on intimate subject and may be embarrassing or make you uncomfortable. If this happens; you may refuse to answer if you choose. You may also stop the interview at any time. The interview may take about 40 minutes to complete.

Benefits

If you participate in this study you will help us to strengthen the health systems in Kenya and other Low-in-come countries in Africa. As a result, countries, communities and individuals will benefit from improved quality of healthcare services. This field attachment is critical to strengthening the health systems as it will generate new knowledge in this area that will inform decision makers to make decisions that are research based.

Rewards

There is no reward for anyone who chooses to participate in the study.

Confidentiality

The interviews will be conducted in a private setting within the hospital. Your name will not be recorded on the questionnaire and the questionnaires will be kept in a safe place at the University.

Contact Information

If you have any questions you may contact the following supervisors:

Lilian Wambui Muiruri wambuikaburi@gmail.com

Dr. Caroline Kawila bettykawila@gmail.com All of Kenya Methodist University, Nairobi campus.

Participant’s Statement

The above statement regarding my participation in the study is clear to me. I have been given a chance to ask questions and my questions have been answered to my satisfaction. My participation in this study is entirely voluntary. I understand that my records will be kept private and that I can leave the study at any time. I understand that I will not be victimized at my place of work whether I decide to leave the study or not and my decision will not affect the way I am treated at my workplace.

Name of Participant.....

Date.....

Signature.....

Investigator’s Statement

I, the undersigned, have explained to the volunteer in a language s/he understands the procedures to be followed in the study and the risks and the benefits involved.

Interviewer..... Date.....

Interviewer Signature.....

INFORMATION FOR DECISION MAKING

Q1. Do you have any data control systems in this facility?

Q1b. If yes to no 1 above how are they used?

To maintain data quality	
To provide data security	
specify others	

Q2. Who regulates data generation and dissemination?

Appointed management teams	
HMIS officers	
Others	

Q3. Please indicate to what extent you agree with the following statements in regards to your facility’s policy in relation to data quality

Statement	Strongly disagree	Disagree	Not sure	Agree	Strongly Agree
There is a policy for data quality standards					
There are available schedules on periodic data audit					
There are audit tools in place					
There is existing evidence of previous audited reports					

Q4. Who receives the information?

Administrator	
CEO	
All managers	

Q5. For what purpose is the data generated used?

To satisfy routine exercise	
To satisfy donor requirements	
For healthcare decisions	
Don’t know	

Q6. The extent of ICT networks across all the county facilities

	Agree	Disagree
All facilities connected		
A few connected		
None connected		

Q7. Please indicate the extent to which you agree with the following questions in regard to ICT networks in your respective facility.

	Strongly disagree	Disagree	Not sure	Agree	Strongly disagreed
All facility units have adequate and functional computers					
All data capture software for various Pillar components are available.					
Networking of main hospitals with the lower Health facilities Is established					

BEHAVIORAL DRIVERS

Q8. Please indicate the extent to which you agree with the following statements in regards to information feedback in your facility and its influence on utilization of health information in decision making.

	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree
Data generated in this facility is used for decision-making					
There is routine feedback on information quality					
There is timely dissemination of information feedback					
Approach used for delivering feedback is satisfactory					

Q9. Please indicate the level to which you agree about the manager's attitude and information use

	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
Managers consider health information produced in my hospital to be of quality					
Managers consider health information produced in my hospital absolutely necessary in making of key crucial organizational decisions					

TECHNICAL DRIVERS

Q10. Tick your best opinion

	Strongly disagree	Disagree	Not sure	Agree	Strongly Agree
You have a schedule of refresher on job training on data Management					
You have undergone any training in various data categories?					
There is evidence of planned training schedules					
You are trained on data components and utilization					

UTILIZATION OF HEALTH INFORMATION

11. Data generated is used for decision making

Yes	
No	

12. All departmental managers collect information on timed schedules and on demand

Yes	
No	

Appendix III: Observation Guide

Environmental Drivers

1. Does the facility have any HMIS unit?
2. Availability data collecting tools
3. Any data management policies in the department
4. Are there any pillar specific data capture software?
5. Are there functional computers?
6. What storage facilities are in place?
7. When were the tools updated last?
8. Does the facility have computers for data capture, processing and transmission?
9. Are there established networks for data transmission?

Behavioral Drivers

1. Are there any minutes for the previous meeting?
2. When was the last meeting held?
3. Is the data generated in this facility used internally?

Technical Drivers

1. How many are HMIS trained officers?
2. Any schedules for refresher trainings?
3. Any software that is capable of capturing and processing of the 6 health pillars?
4. Any visible departmental challenges impeding data generation and transmission?

Information Utilization

1. Do you receive any information on organization performance?
2. How is the information disseminated?
3. For what purpose is data received?
4. Is the information shared?

Appendix IV: Informant Guide

Environmental

- i. How can you describe the data processing tools in this organization?
- ii. What are the reporting tools in the organization?
- iii. What do you consider as organizational structure advantages in this institution?
- iv. What challenges does this unit encounter?

Behavioral

- i. How can you describe your process of data generation and transmission in this organization?
- ii. How can you describe information utilization in this organization?
- iii. To what extent do you appreciate the support of management teams towards health information generation and consumption?

Technical

1. How can you describe your staffing levels?
2. Do you have refresher training schedules?
3. How many are the trained management teams?
4. What do you use for data capture, processing and transmission?

Information utilization

1. Does anyone demand for health information?
2. How often is the information received?
3. Do you get any feedback on information quality?

Appendix VI: Research Clearance Documents

**COUNTY GOVERNMENT OF MERU
DEPARTMENT OF HEALTH**

Telegrams: "HEALTH" Meru
Telephone: Meru 064-32370/1
Fax: 31242
Email: hospitalmeru@gmail.com
When replying should be to:
County Director Medical Services



COUNTY DIRECTOR MEDICAL SERVICES
MERU COUNTY
P.O. BOX 8 - 60200
MERU

Date: 27th March, 2019

Ref: MRU/MED/MRU/C.50

Francis Kimathi Thurania
Kenya Methodist University

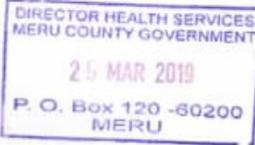
RE: APPROVAL TO CONDUCT ACADEMIC RESEARCH

Your request to collect data for your Research on " **Influence of organizational drivers on utilization of health information for decision making by operational level managers of Imenti South Sub-County Hospitals, Meru County**" has been approved.

You will stick to the approved timelines by the Kenya Methodist University.

Thank you.





for Dr. Lilian Karoki
Director of Medical Services
Meru County



KENYAMETHODISTUNIVERSITY
P.O. BOX 267MERU -60200, KENYA
FAX :254-64-30162
TEL:254-0674-30301/31229/30367/31171
EMAIL: INFOUKEMI.ACH'

23^{R D} MAY, 2019

Francis Kimathi Thurania
HSM-3-0124-1/2014
Kenya Methodist University
Dear Francis.

Khemu/SERC/HSM/48/2019

**SUBJECT: ETHICAL CLEARANCE OF A MASTERS' DEGREE RESEARCH
THESIS**

Your request for ethical clearance for your Masters' Degree Research Thesis titled "Influence of Organizational Drivers on Utilization of Health Information for Decision Making by Operational Level Managers: A Case Study of Imenti South Sub-County Hospitals, Meru County, Kenya" has been provisionally granted to you in accordance with the content of your research thesis subject to tabling it in the full Board of Scientific and Ethics Review Committee (SERC) for ratification. As Principal Investigator, you are responsible for fulfilling the following requirements of approval:

All co-investigators must be kept informed of the status of the thesis.

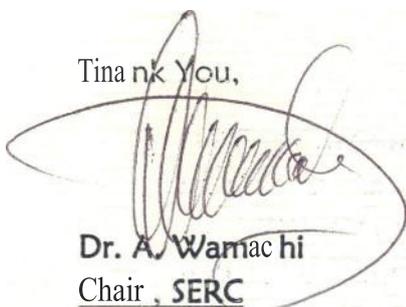
1. Changes, amendments and additions to the protocol or the consent form must be submitted to the SERC for re-review and approval prior to the activation of the changes. The Thesis number assigned to the thesis should be cited in any correspondence.
2. Adverse events should be reported to the SERC. New information that becomes available which could change the risk-benefit ratio must be submitted promptly for SERC review.
3. The SERC and outside agencies must review the information to determine if the protocol should be modified, discontinued or continued as originally approved.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by subjects and / or witnesses should be retained on file. The SERC may conduct audits of all study records and consent documentation may be part of

such audits.

5. SERC regulations require review of an approved study not less than once per 12-month period. Therefore, a continuing review application must be submitted to the SERC in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion will result in termination of the study, at which point new participants may not be enrolled and currently enrolled participants must be taken off the study.

Please note that any substantial changes on the scope of your research will require an approval.

Thank you.

Tina nk You,

Dr. A. Wamachi
Chair, SERC

Cc: Dean.RD&PGS



KENYA METHODIST UNIVERSITY
Department of Health Systems Management

P. O. Box 45240-00100, NAIROBI, KENYA
Tel: 020-2247987, 020-2248172
Fax: 02-246160

Mobile: 0725-751878
0735 - 372326
E-mail: mailto:msc@kemu.ac.ke

27th June, 2019

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: STUDENT ENROLLED FOR A MSc. THURANIRA FRANCIS KIMAJIHI
(HSM-3-0124-1/2014)

The above named is a student in the department of Health System Management at Kenya Methodist University. He was enrolled in January 2014. He is due for data collection for his thesis towards the award of a MSc. degree in Health System Management.

Topic: "Influence of Organizational Drivers on Utilization of Health Information for Decision Making by Operational Level Managers: A Case Study of Imenti South Sub-County Hospitals Meru County, Kenya."

Any assistance accorded to him will be highly appreciated.

Yours Sincerely,

Dr. Kezia Njoroge
Chair
Department of Health Systems Management
E: kezia.njoroge@kemu.ac.ke/ Cell: 0738 970746





**NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION**

Telephone: +254-20-2213471,
2241349, 3310571, 2219420
Fax: +254-20-318245, 318249
Email: og@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Wanyuki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No: **NACOSTI/P/19/55931/31748**

Date: **14th August, 2019**

Francis Kimathi Thuranira
Kenya Methodist University
P.O. Box 267- 60200
MERU.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"Influence of organizational drivers on utilization of health information for decision making by operational level managers. A case of Imenti South Sub-County Hospitals Meru County, Kenya."* I am pleased to inform you that you have been authorized to undertake research in **Meru County** for the period ending **14th August, 2020**.

You are advised to report to **the County Commissioner, the County Director of Health Services, and the County Director of Education, Meru County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a **copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.


GODFREY P. KALERWA., MSc, MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Meru County.

The County Director of Education
Meru County.