ORGANIZATIONAL RELATED FACTORS INFLUENCING WASTE MANAGEMENT IN KERICHO MUNICIPALITY, KERICHO COUNTY, KENYA

BY

AGNESS SAINAH

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTERS OF ARTS IN PROJECT PLANNING AND MANAGEMENT OF THE UNIVERSITY OF NAIROBI

2016

DECLARATION

This research is my original work and has not been presented for award of degree in any other university or institution.

Signature: ....   Date: ....

Agness Sainah

L50/73228/2014

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

Signature: ....   Date:......................................

Dr Raphael Nyonje

Senior Lecturer,

Department of Extra Mural Studies

University of Nairobi

DEDICATION

I dedicate this work to my parents Joseph Saina and Hellen Saina and my family who always looked forward for my advancement in Education.

ACKNOWLEDGEMENT

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURE

LIST OF ABBREVIATIONS AND ACRONYMS

ECO Canada   **:**   Environmental Careers Organization of Canada

KEWASCO   :   Kericho Water and Sewerage Company

MWM   :   Municipal Waste Management

MSWM   :   Municipal Solid Waste Management

NEMWA   :   National Environmental Management Waste Act

NEMA   :   National Environmental Management Authority

NWMS   :   National Waste Management Strategy

UNEP   :   United Nations Environment Programme

ABSTRACT

Waste management is a critical processing ensuring health of the public, aesthetic value, environmental sustainability and other environment reasons. Organizations that are tasked with waste management should be able to provide the direction and lead. The purpose of this study was to correlate the organizational factors influencing waste management in Kericho municipality, Kericho County. The objectives of the study were to determine organizational systems influence on waste management in the municipality, to access the extent at which infrastructure influence waste management in the municipality and investigate human resource influence on waste management in the municipality and to establish the level at which planning influence waste management in the municipality. The study would be vital for County government put stringent measures and come up with strategies within the department of environment for efficient waste management. A descriptive survey design was used in implementing the study. The target population was the staff of department of environment, Kericho County, KEWASCO and NEMA. Census was used to sample 120 respondents. 120 questionnaires were administered. Structured questionnaires were used to collect data. The data was analysed using statistical software packages that was Microsoft Access and SPSS. The findings revealed that, the policies present were adequate in management of waste. The Organization had management structures that were efficient in delivery and management. The Organization was up to date with technologies that efficiently handle waste management. The public was involved in decision-making processes of the organization; the roles of every personnel in the organization were well defined. The Organization structure and the procedures put in place were efficient in handling waste management matters. Human resource factors are ranked to be the most separate (grand: X = 3.63 & s.d = 0.396). Financial planning factors (grand: X = 3.66 & s.d = 0.221), organizational factors (grand: X = 3.83 & s.d = 0.097) and lastly, infrastructure factors grand: X = 3.85 & s.d = 0.141). The pearson correlation showed that there was statistical relationship among the variables. The study concluded that the impact of poor waste management practices on the natural environment was acknowledged. The researcher recommended more trainings and enrolment of experience waste experts in Kericho Municipality. There is also need to reduce temporary personnel and make them permanent to build their confidence in the organization. The researcher suggested further studies on modern management of waste that is in line with sustainable development goals.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Waste management is the production of waste collection, dispensation, transfer and discarding. Waste management improved the health of human being, the aesthetic, and the entire surrounding ecosystem (Rushton, 2003).

A study in United Nations Environment Programme (UNEP) stated that approximate 3.5 billion people were without access to waste management services, and expose dumping remained the common waste-disposal method in most developing countries. More than 1.3 billion tonnes of municipal waste were estimate to have generated in 2012 and 2.2 billion tonnes a year are expect to be generated by the year 2025. Urbanization, industrialization, increasing population and economic development are all contributing to the rise in waste and also to its increasing complexity and hazardousness. The report further notes that the figures on municipal waste collection rates were likewise sobering. In low- and middle-income countries collection coverage can be as low as around 40%, compared to the 98% for high-income countries. Some middle-income countries still disposed of waste at poorly operated landfills (National Waste Management Strategies, 2013).

Poor waste management can lead to some significant environmental and health hazards. For example, open burning of waste can cause air pollution, and a failure to use recycled materials from waste means an acceleration of the depletion of 'raw' materials. Unfortunately, it is those who live and work near waste disposal sites – urban poor - that are most at risk sometimes suffering acute health impacts. These striking facts, along with the reality of poor institutional capacity, financial

constraints and lack of political will, make waste management among the most significant planning challenges faced by developing and transition-economy countries in the 21st century (UNEP, 2013).

A study done in U.S. showed that municipal waste management from residents, industry, businesses, and institutions were over 236.2 million tons before recycling, which was almost 2 times more than the year 1960 (88.1 million tons). From the analysis point of view, an estimate of 12.6 kg waste per week per person in the year 2003, nearly twice of the year 1960. For the composition of municipal waste like, polythene, papers, plastics and cabbages or open sewage for instance, courses environmental problems and health hazard to air pollution etc. In urban region in developing countries, inadequate waste management and immature treatment technology worsen the situation (Kui Li, 2007).

According to the study report by Coetzee, B. et al (2014) which was presented at the proceedings of the 20th Waste Conference on 6-10 October 2014, Somerset West, Cape Town, South Africa reformed its environmental legislation dealing with pollution and waste management in 2008 after a ten-year policy drafting process. Globally - accepted best practice principles such as "precaution", "prevention", "the polluter pays" and "separation at source" are enshrined in the South African National Environmental Management Act (NEMA) and the National Environmental Management Waste Act (NEMWA). The NEMWA stipulates a fundamental change to the classic municipal waste management (MWM) system that is based on end-of-pipe waste disposal. As it was, MWM forward planning relied on a mechanistic, almost-linear logic and a narrow analysis focused on technology-based solutions to cope with growth and development. The National Waste Management Strategy (NWMS) with its timelines and waste minimisation targets required systems and

infrastructure changes with far reaching capital funding and status quo change implications. The NEMWA forces a re-evaluation of the systems, infrastructure and funding necessary for a municipality to meet the new waste management objectives and to generate economic opportunity. This came in the face of the many growing challenges and backlogs most municipalities already faced. MWM would have to adapt to integrate municipal and private sector systems, with complexities that cannot be addressed by the classic planning approach (Coetzee, B. et al 2014).

In Kenya According to the Ministry of Environment and Mineral Resources, (2011), draft national education for sustainable development policy. The inefficient and wasteful production systems lead to unsustainable utilisation of natural resources resulting in their degradation. Further, the poor enforcement of policies and regulations governing production and marketing hinder economic growth and the attainment of its optimal performance. The environment sector in particular has a number of challenges which include; frequent droughts, natural disasters, acute water shortages, climate change and variability, loss of biodiversity and poor waste management systems. This has resulted in land degradation and loss of forest cover which currently stands at a mere 1.7 per cent of the total territorial surface area falling far below the globally recommended 10 per cent minimum cover. Moreover, about 88 per cent of the country's total surface area is comprised of ASALs while desertification is on the rise as a result of fragility of the ecosystems. Negative impacts on the environment have been as a result of the robust industrial development experienced in the country over the last four decades. This has resulted in increased waste generation leading to unsustainable waste management practices. The Vision 2030 has anchored key goal driven by the principles of sustainable development. In order to realize this goal, four strategic

thrusts have been geared towards, namely; conservation of natural resources, pollution and waste management; Arid and Semi Arid Lands and high-risk disaster zones and environmental planning and governance (Ministry of Environment and Mineral Resources, 2011)

1.2 Statement of the problem

Waste management is a critical pillar in any urban planning process. The urban population is rising each year leading to scarcity of resource or congestion of resource in regards to waste management. In Kericho Municipality, the population as at 1999 was 30,023 and as at 2009 the urban dwellers population was 141,800. In regard to that the organisations mandated with Waste management should always be up to the task in ensuring proper and efficient collection, processing, transport and disposal of the waste generated. The waste generated in Kericho takes many forms; household waste, industrial waste, and solid waste this can be sewage waste etc. These types of waste should be regulated, managed to uphold the health of the public and aesthetic value and other environmental reasons. Air pollution and waste pollution is prevalent in many towns in Kenya including Kericho. Most dwelling places like Nyagachok, Majengo, Baraka estates in Kericho Municipality are congested with high number of population and house. Most homes lack proper disposal guidelines to enable effective management of the Waste management from household thus becoming a challenge to organisation like KEWASCO, NEMA Kericho and Ministry of Public Health Kericho, which are tasked with ensuring proper Waste management. Organisation like NEMA are charged with policy formulation, strategic planning. Furthermore, it oversees implementation of these policies (EMCA, 1999). On the other hand, KEWASCO is tasked with collection, processing in case of industrial waste,

transportation and disposal of the waste generated (kericho.go.ke). Concerning this organisation tasked with Waste management are critical in ensuring efficiency in their undertakings. In the municipality there is a lot of litters and sewage leakages thus, this study was conducted to explore the organisation reasons behind the Waste management in Kericho Municipality in Kericho County.

1.3 Purpose of the study

The purpose of the study was to determine the organisational factors influencing waste management in Kericho municipality, Kericho County.

1.4 Objectives of the study

i. To determine how organisational systems influence waste management in Kericho municipality, Kericho County, Kenya.

ii. To assess which infrastructure influence waste management in Kericho municipality, Kericho County, Kenya.

iii. To investigate human resource influences waste management in Kericho municipality, Kericho County, Kenya.

iv. To establish the level at which financial planning influence waste management in Kericho municipality, Kericho County, Kenya.

1.5 Research questions

The study sought to answer the following research questions:

i. How do organisational systems influence waste management in Kericho municipality, Kericho County, Kenya?

ii. To what extent does infrastructure influence waste management in Kericho municipality, Kericho County, Kenya?

iii. How does human resource influence on waste management in Kericho municipality, Kericho County, Kenya?

iv. To what extent do financial planning influences waste management in Kericho municipality, Kericho County, Kenya?

1.6 Significance of the study

The study sought to determine the organisational factors influencing waste management in Kericho municipality, Kericho County. It is hoped that the findings of this study would be of help to the Kericho County, in coming up with plan and policies that would enhance waste management in Kericho town and other towns in Kericho county. The government also through the Ministry of Environment and Natural Resources and National Environmental Management Authority (NEMA) would come up with policies that encourage and nature the waste management stakeholders as a whole. This can be a good way to enhance Public Private Partnership (PPP) investment in the industry.

Findings of the study were particularly useful in providing additional knowledge to existing and future institutions on organisational factors that influences waste management in Kenya. This will expand their knowledge on waste management; also identify areas of further study. The study is a source of reference material for future researchers on other related topics; it will also help other academicians who would undertake the same or related studies. The study will also highlight other important relationships that require further research.

1.7 Basic assumptions of the study

The assumptions made for the purposes of this study were; the participants gave truthful and accurate information to the researcher, secondly, census chosen for the study was fair representation of the entire targeted population and finally, used for the study were appropriately show organisational factors influencing waste management in Kericho Municipality, Kericho County.

1.8 Limitation of the study

Limitations faced during the study were new personnel/structures, devolution, unwillingness of some respondents to participate in the study. The researcher overcame it by briefing the respondents on the importance of the study.

Another challenge was administration of questionnaires especially on the part of dependent variable. The researcher overcame this by using the independent variable related concepts.

1.9 De-limitation of the study

The study focused on Kericho Water and Sewerage Company (KEWASCO), the department of water and sanitation in the Ministry of Environment Kericho County Government and Kericho NEMA Offices. The three offices were chosen because they were the main administrative offices dealing with waste management in Kericho municipality. The de-limitation to the three offices made the collection of the data from the targeted population feasible and within a short time.

1.10 Definition of terms used in the study

Waste Management: The activities, administrative and operational, that are used in handling, packaging, treatment, conditioning, reducing, recycling, reusing, storage and disposal of waste.

Organisation System: The distribution of functions and responsibilities and correspond to organizational structures, procedures,methods, institutional capacities and private sector involvement.

Infrastructure: This are the facilities for waste disposal, means of transporting waste, equipments used in waste management; recycling, Incineration, storage equipments.

Human Resources: This are the personnel both skilled and unskilled tasked with waste management process. Policy formulation experts and waste management strategic planning experts.

Finance Planning: Development plans and strategies that influence waste management.

Waste: This are refuse from households, non-hazardous solid waste from industrial, commercial and institutional establishments (including hospitals), market, yard and street sweepings

1.11 Organization of the Study

The research project is classified into five chapters. Chapter one was the background of the study, statement of the problem, purpose of the study, objectives of study, research questions, significance of the study, basic assumptions of the study, limitation of the study, de-limitation of the study, definition of terms used in the study and organization of the study. Chapter two entailed the review of the literature relating to research objectives, the theoretical framework and the conceptual framework. Chapter three focuses on Research methodology to be employed and includes the following sub-areas, research design, target population, census, sample instruments, validity and reliability of research instruments, data collection procedures, data analysis and ethical issues in research. Chapter four presents the analysis, presentation, interpretation and discussion of research findings. Finally, chapter five presents the research summary of the findings, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter explores the relevant literature on the previous related studies bases on the sub-areas as following:- model of waste management, Policy factors influencing waste management, Organisational systems influencing waste management, Infrastructure influence on waste management, human resource influence on waste management and planning influence on waste management. Lastly, review theoretical framework and conceptual framework of the study.

2.2 Concept of waste management

Municipal waste is refuse from households, learning institutional, non-hazardous waste both from public and private organizational, from industrial, and commercial market waste. Management is a cyclical process of setting objectives, establishing long-term plans, programming, budgeting, implementation, operation and maintenance, monitoring and evaluation, cost control, revision of objectives and plans. Management is a cyclical, goal-oriented process. Municipal waste management (MWM) is the collection, transfer, treatment, recycling, resource recovery and disposal of waste in urban areas (Schübeler, P. Et al, 1996).

MWM's goal is to protect the health of the town dwellers, especially the low-earners who are borne to these poor sewage leakages. In addition, MWM aims to protect environment by minimizing sewage leakage and pollution of air, water, soil and other waste that affect the environment in urban areas. MWM also protect urban planning in

term of building structures by ensuring that they follows lay down roles governing construction not to interfere with sewages structure so as to ensure the efficient use and conservation environment (Schübeler, et al, 1996).

The scope of MWM are planning and management which include; Strategic planning, Legal and regulatory framework, Public participation, Financial management that is cost recovery, budgeting, and accounting). Institutional schedule are private sector participation, Disposal facility sitting, waste generation; Waste characterisation that are resource, rates, and composition, etc. Waste minimisation and source separation and waste handling processes; Waste collection, Waste transfer, treatment and disposal and Special wastes like medical, small industries (Schübeler, P. Et al (1996).

A report by West Australia Waste Authority (2012) showed that in West Australia, waste management has been improved consistently. In the year between 2004 – 2005 and 2009 – 2010, the amount of waste reprocessed tripled from 970,000 tonnes to 2,650,000 tonnes, in which waste disposal alone had increased from about 720,000 tonnes in 2008 – 2009 to over 1,210,000 tonnes in 2009 – 2010 due to increase of population (WAWA, 2012). The report by WAWA sited three key approaches that were employed in waste management. First, the increase of knowledge and the understanding of why and how to implement change. This approach was important in getting people and organisations started on behavioural change. The second approach was availing waste management infrastructure at the right time. By so doing, it enabled the people and organisation to be actively engaged in waste management systems in order to improve the effectiveness and efficiency. Finally, the third approach was the introduction of incentives to

encourage good practices in waste management; this provided the driving force for change (WAWA, 2012).

2.3 Organisational systems influencing waste management

Organizational systems vary from one organization to the other. It influences the output of an organization in relation to the structures and specific responsibilities. Mandates of different levels and their clarity to the personnel. Competences of the management and adoption of new technologies in the management system may affect the organization on either side i.e. positively or negatively. Structure and systems are important secondary element of the organizational life.

Management system requires knowledge between all the components within the system and the people that work in it. Organization system is considered strategic in nature, open to the ecosystem, dynamic in operation, strives for equilibrium, and seeks optimization of system by incorporated of interacting elements to carry out join together on objectives of an organization. (Holmes and McClaskey, 1992). Organizational system is the measurements of customer satisfaction on products and services or benchmarking other organizations' best practices. Analysis and decision, considers processes inside the system that result from acting upon the information from outside the system. In an organizational system, analysis and decision which includes the leadership, employee involvement, process improvements, and communications necessary to tailor a specific response (Holmes, and McClaskey, 1992).

The success of organization system on performance largely relied on the knowledge, and incentive of its workforce. Employee involvement are aligns with human resource development with mission plans and transform processes. It focuses on empowering

the workforce, strengthening workers-manager partnerships. It strengthens commitment for a purpose, performance goals, and an approach.

2.4 Infrastructure influence on waste management

Improvement of urban infrastructural services is the responsibility of the municipality of the local government. For efficient and effective service of waste management is necessary to collaborate with private enterprises and with the users of services participation wit the community surrounded rather than to leave the responsibility to the County Government (Schübeler, P. Et al, 1996).

Increase population on urban dwellers increases the land use, which brought infrastructural challenges, which crippled the capacity of municipality in low-middles countries in improving waste management service levels at the level required (Périou, 2012).

Hoornweg and Giannelli, (2007), point out some infrastructural challenge in third world countries. Municipalities in these developing countries have to improve waste collection and disposal. Infrastructural and technical constraints can be divide in order to gain a better understanding of these challenges and will help inform our technical interventions for more sustainable WMS in developing countries. In a situation where the infrastructure is not in place citizens will have a problem in dealing with their waste. Also Inadequate landfill disposal contributes to infrastructural factors influencing waste management.

Ineffective infrastructural tools have been main cause of poor service. The study done on developing countries on waste management revealed that many sources of waste

only is reached by roads, which are inaccessible to certain methods of transport due to their width, overcrowding, and elevation. There is also critical in unplanned settlements like slums for the low-income peoples which mostly affect the selection of equipment as citied by (Zhu et al., 2008). A study done in India revealed poor conditions of containers, inadequate maintenance of infrastructural and replacement of breakdown vehicles for collection, litters at collection points of refuse which contributed to behaviors such as littering and illegal dumping by peoples who disposes any where trash because trash bins and waste services were not properly managed (Hazra and Goel, 2009).

The study done in Ghana by Asase and Colleagues (2009) pointed out that there were no proper disposal sites in the country. Insecure and uncontrolled dumps sites, which pose a danger to the health of the human being, environmental health, waste management resources, and endanger residential development in the areas, are a commonality found in many third world countries. Unlike developed nations, developing countries lack proper sanitary landfills and often times disposal sites are located at a outside urban areas distance from communities.

2.5 Human resource influence on waste management

According to (Schübeler, P. Et al, 1996) stated that human resource influence on waste management between the job requirements and the actual qualification of the staff at the managerial and operational levels. As an initial step towards improvement, awareness, building measures regarding environmental and sanitation issues may be required among responsible staff. Based on the organisational development plan, job descriptions and training needs analysis, a programme for work force development are

elaborated and an appropriate training programme should be implemented. As appropriate, institutional capability for training and human resources development for MWM should be established at the city, regional or country level. Creation of a national professional body for waste management will help to raise the profile of the profession and promote improved operational and professional standards of waste management.

ECO Canada (2010) stated that water and wastewater are issues all municipalities, regardless of size and facility level, reported a few common issues regarding the labour market for water and waste water treatment facilities. Municipality size, location and facility level all factor into the recruitment, retention and training challenges a facility encounters in term of human resource on management of waste. Main factors include;

2.5.1 Shortage of qualified operators and operators-in training

ECO (2010) state that current shortage shows signs of only increasing waves of retirements that continue to take qualified workers from the workforce. Level 3 and 4 facilities, in particular, struggle to find operators certified to the level of their facility. The labour shortage would be magnified in small, remote communities that have fewer resources, a smaller labour pool to draw from, and lose top talent to larger communities.

2.5.2 Neglected Employee Expertise through lack of resource and training support

Many municipalities feel that training resources available to them are insufficient for workers to maintain training and certifications, and that there is a lack of appropriate training courses to satisfy the professional development needs of practitioners in the field of environmental waste management.

2.5.3 Lack of essential skilled on employees

The corruption in the municipalities where specialized employees on the field or untrained employees, lack of soft skill training has lead to considerable gaps in the industry in areas such as leadership skills, communication skills, and computer skills, which hinders practitioner's abilities to move up in the workforce. Focus group participants labelled lack of recognition of training and experiences, both between provinces and internationally, is a considerable hindrance to operator mobility in management of waste.

2.5.4 Lack of awareness and interest for waste occupations

The main issue that municipalities identified relating to waste management was ensuring that careers in the waste management industry are recognized as respectable

careers that promote environmental health and protection. Many municipalities use a combination of clever, imaginative and functional activities to keep practitioners engaged, which helps to reduce the challenge of worker retention.

2.5.5 Limited career growth in smaller facilities

Career paths for waste management practitioners are not clear, especially in smaller facilities. Focus groups identified larger facilities with more roles and positions don't have this problem in payment of the salaries and allowances, and practitioners have an easier time in advancing their careers.

2.5.6 Training and development opportunities fail to address core skills

Training and professional development for practitioners in waste management facilities tend to focus on technical aspects of the firms. Many municipalities feel administrative and communication skills are inadequately represented in their workforce due to the lack of suitable training opportunities in those areas.

2.6 Planning influence on waste management

The planning process provided the scope and framework for managing potential environmental impacts. The local communities were not adversely affected, Primary attention to appropriate strategic planning and financial management methods, including cost-oriented accounting systems, budget planning and control, unit cost calculations, and financial and economic analysis. With regard to operational planning, appropriate management methods and skills which are data collection techniques, analysis of waste composition, waste generation projection and scenario techniques, formulation of equipment specifications, procurement procedures and management information systems for effective planning, evaluation and monitoring, (Schübeler, P. Et al, 1996).

Zurbrügg and Schertenleib, (1998), pointed out that county sector that dealt with waste management in less developed countries spend 30 to 60 percent of the total county expenditure for wastes management and related services. However, waste is collected, which mean serving less than 50 percent of the population, and once collected, it is mostly disposed off inadequately in uncontrolled open dumps.

Operational inefficiency of municipality waste collection service are due to inefficient institutional structure, inefficient organizational procedure, deficient management capacity of the institution as well as the usage of inappropriate upto date technologies (Zurbrugg, 2003). It also implies that there are inadequate service coverage of waste, which happened because of financial constraint, operational inefficiency by municipality, which happened due to institutional factors such as organizational structure, and technical skill of the human resources.

A study by Schübeler, (1996), state the adequate number of human resources, technical skill to operate the system and training are the crucial point for the success of waste management operations. There is a budgetary constraint in developing countries where resources are inadequate and distributions of available limited funds are mismanaged. A lot of municipalities are struggling to achieve acceptable quality and coverage of service due to these financial constraints. A study done in Palestine revealed that on average, up to 50 percent of residents lack collection services and dumping areas in urban areas of low and middle-income countries due to unplanned settlement and increase in population. There are limited opportunities for the development of sustainable designated WMS, as municipality budgets are limited and proper waste collection is overlooked (Al-Khatib etal., 2010).

On the designated site and the recycling habits of citizens, a case study in India found that the location of recycle bins seemed to be unplanned situated and not readily available. Venkateswaran, (1994) cited that location and convenience are important determinants in acceptance or rejection of the activity. Irregularity of services such as street sweeping and collection of waste were also observed. The author found that the lower the socio-economic level of the inhabitants of an area, the lower the frequency of collection of the waste. This was also found to be true in a study done in the poorer areas of Nairobi City where the over 90 percent of the citizens interviewed had no storage receptacles. 84 percent of these group resorted to either burning the waste in their backyards or to indiscriminate dumping and dumping in their toilets, 90 percent discarded waste indiscriminately (Mwanthi and Nyabola, 1997).

A study done by Henry et al., (2006) in Kenya found that much of the county budget for waste management is directed to pay for an over-staffed and under-qualified workforce, corruption and not allocated to make improvements within their own infrastructure. The data analysis done suggests that the lack of vehicles, qualified man power supervisors, and waste collection crews were the major obstacles to the management of waste in the country (Mwanthi and Nyabola, 1997). These were attributable to financial constraints and possibly to misappropriation of finances within the county offices that manage waste.

Poor coverage service and inefficiencies operations of services like an unskilled workforce is another major set of problems faced by county level in providing sufficient waste services to citizens. Municipal waste collection schemes of cities in the third world countries generally serve only upper class citizens living in a designated area of the urban area. The people remaining without waste collection

services are usually the low class citizens living in urban and rural areas as noted by (Zhu et al., 2008). The main reasons were the lack of financial resources to cope with the increasing amount of generated waste produced by the growing population and cities.

A study done in Kenya found that resources were centralized in more influential areas since there are not enough work forces to cover entire cities or population and since this areas were more likely to pay for the services offered (Henry et al., 2006). Dwellings in this areas may have space for storing waste for several days, but high class staff housing with no space for storage may necessitate that some waste is taken outside the property as soon as it is generated. Streets, which are narrow, may not have space to locate storage containers and may be so narrow, treacherous or irregular that collection trucks cannot be used but hire work force to transport to designated dumpsite. Homes that are substantial distances from the accessible road poses problems in handling adequate waste services. A study done by Mwanthi and Nyabola (1997) stated that lack of skilled and technical human resources along with poor management of finances and resources, and laxity among employees leading in the inconsistent service were main factor contributing to mismanagement of waste in Nairobi City.

In addition, lack of financial resources, operational inefficiency affects the availability and sustainability of waste collection services. The reality of developing countries, officers in charge of waste management, particularly at local level, have no technical background or training in management of waste (Ogawa, 2005, as cited in Puopiel, 2010). Since there little or no training for employees or no technical knowhow, the operation of waste collection service is becoming inefficient. Besides, if the

institution or municipality structure does not reflect the responsibility of the sector or other related procedures and there is lack of management capacity, operational inefficiency in waste collection services.

In regard to the technical system, collection approach, as developed and used in the industrialized countries, which applied in developing countries. They used sophisticated machines, expensive and difficult to operate and maintain, thereby often inadequate for the conditions in developing countries. After a short time of operation usually only a small part of the vehicle fleet remains in operation (Zurbrugg, 2003).

The operational inefficiency of waste collection service are solved and minimized through training of employees through involving private sectors on waste management system. A study by Zurbrugg (2003) stated that because of the failure of municipal system to provide adequate and efficient service, currently many developing countries have great interest in contracting private sectors or companies in waste management. Besides that it is noted that arrangement with private sectors have not all been successful; rather the main factor for the success of private participant is the ability of clients mostly municipal administration to write and enforce an effective contract. Moreover, it is important to consider the other key components of successful arrangement. They are competition, transparency and accountability on private sectors side to manage waste.

Monetary constraints, inadequate service coverage and operational inefficiencies of services which include unskilled work force, lack of upto date technologies and

equipment, inadequate disposal site, and limited utilization of waste management activities such as recycling require which require more funding.

2.7 Theoretical framework

2.7.1 System Theory

Most of the organizations model emerges to be pyramid shape. The structure/activities are divided up and reporting relationships established. System theory has been applied in the study of organizations. The system follows a productive process such as input-throughout-output mechanisms. This theory illuminates enabling processes: the mechanisms that control and measure the relationships and interactions among the organization's subsidiary parts--individuals, groups, departments. The key points are: something that affects one part or level of the system affects all other parts and levels and no single part of the organizational system can be allowed to sub-optimize, or over-achieve, each part must operate in concert with all other parts.

2.8 Conceptual framework

Kombo and Tromp (2009), contend that a concept is an abstract or general idea inferred or derived from specific instances. The section therefore provides a diagrammatic presentation of conceptual framework for attainment of the related factors influencing waste management. It articulates the relationship between independent variables, dependent variables and intervening variables.

Intervening variable

Population growth

Financial constraints

Organisational Systems.
- Procedures
- responsibilities

Infrastructure
- Solid waste facilities
- Water waste facilities

Dependent variable

Waste Management
- Efficiency of operations

Human Resource
- Personnel skills
- Training and capacity building

Planning
- Financial budgeting
- Operational
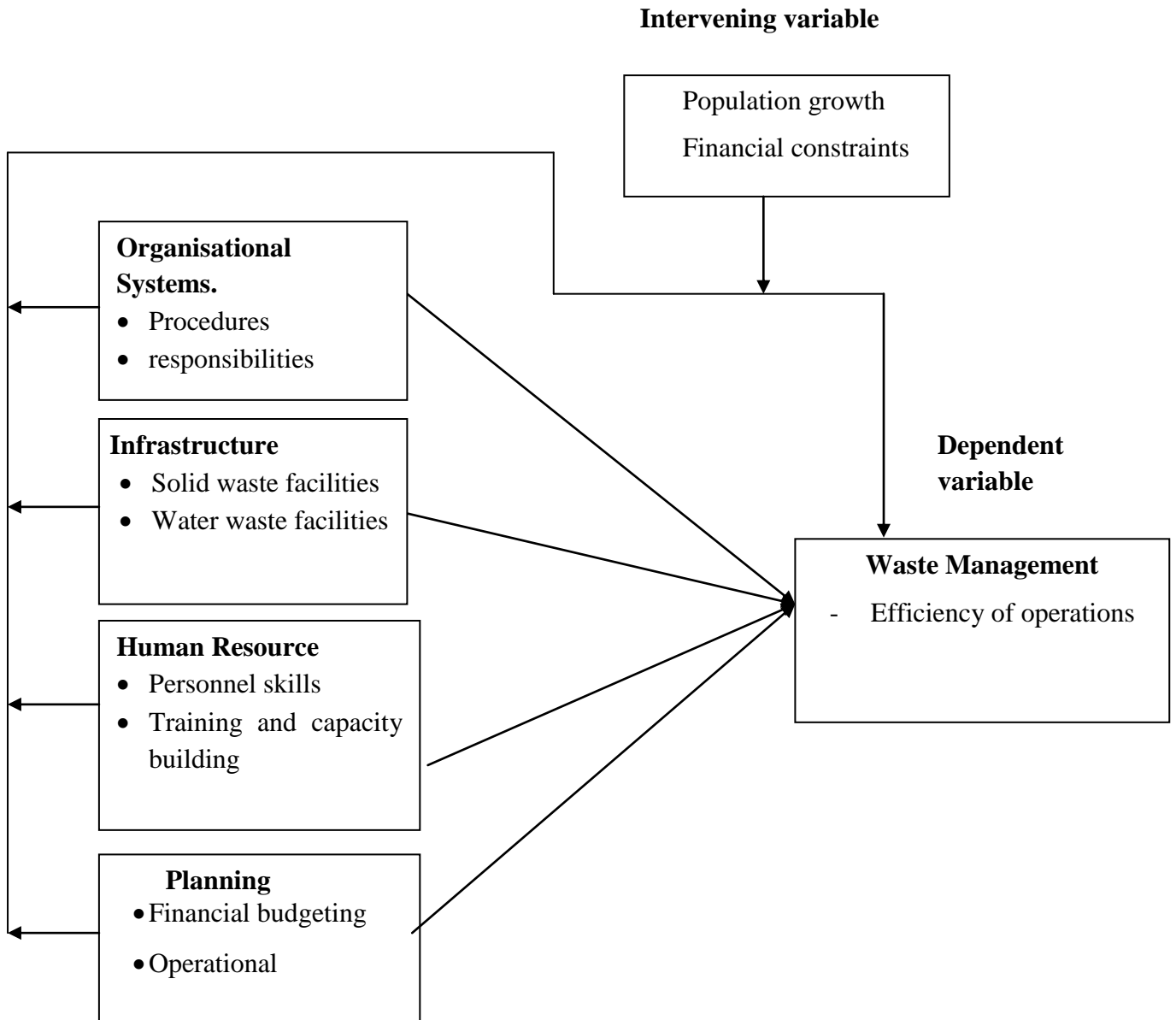
Figure 2.1 Conceptual framework

The various variables are briefly discussed;

Organizational systems link the management of waste where procedures are adhere to for smooth running of the organization. Responsibilities on the other hand determine efficiency and output.

Infrastructure is connected to the facilities for solids and watery wastes. These include tranches, tractors, litter tins, etc. and its availability. The type of facilities determines the skills required for maintenances and provision of expected services. Human

23

resource is a driving force to any organization. Human skills and knowledge are required to make organizational grow. Training and capacity building helps in the continuity and adoption of new technology.

Planning is a function of management thus a requirement that influence, waste management in this case. Financial budgeting and operations is main indicator in this research.

The intervening variables; population growth and financial constraints have been identified to contribute either way on waste management. Finally, the dependent variables, waste management would be measured from the outcomes of the independent variables given.

2.9 Knowledge gap to be filled

Many researchers have majored in their studies on waste, and sewage waste in relation to environment but no study on organizational related factors influencing waste management. This study will fill the gap other researchers left.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter give an account of the techniques and procedures employed in the research study. These include; the research design, target population, sample size and sample population which entails selection of sample from population, research instruments which involve pilot testing, validity of research instruments and reliability of instruments, data collection procedures, data analysis techniques and finally winding up the chapter with Ethical issues in research.

3.2 Research Design

The study adopted descriptive survey research design with quantitative approaches. Descriptive survey design was suitable for through research because of its ability in collecting information by interviewing or administering questionnaires to sample of individuals. This design facilitates rapid data collection and ability to understand population from a sample (Oso and Onen, 2009).

The descriptive survey design, which was used in this study, focused on objectives formulation, designing data collection instruments, sample selection, collecting data, processing and analyzing data and reporting the findings (Mugenda and Mugenda, 2003). This research design adopted allow the researcher to describe, record, analyze and report the existing conditions addition it also gave an opportunity the researcher to come up with descriptive data which was employed in determine relationships between the variables.

3.3 Target Population

The study was conducted in the Department of Environment Kericho County headquarters, Kericho water and Sanitation Company and NEMA offices. The study targeted all the employees of the Department of Environment in Kericho County Government, KEWASCO and NEMA. According to the public service board of Kericho County Government, the DEPARTMENNT of Environment had 120 employees.

3.4 Sample Size and Sample Selection.

This section explain how the sample size and sample selection used in the study was achieved. Sampling is part of statistical practice that is tasked with the selection of a subset of the population, which was used when dealing with population with intention of coming up with knowledge about the population attributes for the purpose of making prediction based on purpose of making prediction based on statistical inference (Sekaran 2010).

3.4.1 Sample Selection

Selection of the sample size depended on factors such as the number of variables in the study; the purpose of study, population size, the risk of selecting a "bad "sample, research design type, data analysis method and the size of accessible population and the sampling error allowable (Israel, 1992).

The study used census techniques, involving the targeted population of 120 staff from KEWASCO, NEMA and County department of environment. This would give findings that are more reliable.

3.5 Research Instruments

The study used questionnaires to collect data; the questionnaires were structured into 5 broad categories. It started with background information of the respondents, which included; gender, age, educational level, length of services in the organization, term of service, and the position of the respondent. The second category, it discuss captured organizational system factor; policies, structure, technology, decision making, personnel role and procedures. Thirdly, infrastructure factors which included; quantity, compliancy, disposal sites, involvement of private sector and public awareness. The fourth section focused on human resource: training, health and safety, performance contract, remuneration, adequacy, expertise and decision making and finally financial planning which included: involvement in budgeting and cost control, funds allocation, financial monitoring, grants and aid, budget allocation and revenue collection.

3.5.1 Pilot Testing

Pilot testing is an ethical step in the research process it will reveal vagueness of questions and under instructions. As noted by Mugenda and Mugenda (2003)., the staff who were taken in for pilot study did not form part of respondents during the actual data collection. Members of the neighbouring County of Bomet department of environment and sanitation were used for piloting. The researcher verified the validity of the instrument by studying the responses to questions by respondents to see whether participation got the same meaning out of the questions. The pilot testing helped the researcher to include important comments and suggestions from respondents thus improving on the efficiency of instrument. Also the researcher was able to identify vague and under instructions.

The data collected during pilot study was prepared, analyzed and interpreted leading to further corrections of the instruments in readiness for the phase of main data collection.

3.5.2 Validity of Research Instrument

A research instrument is valid if it measures what is intend to measure and when the data collected through it accurately represent respondent's opinions (Amin, 2005). Validity established the relationship between the data (Mugenda, 2003). Two ways were used to determine the validity of the research instrument. The first method was through the conduction of pilot study to ensure dainty of instructions. Secondly measuring instrument content validity was the extent to which it gave out satisfactory capture of the investigative questions in the study. The research supervisors within the university ascertained the content validity. In addition, the university supervisors confirmed the instrument, gave insight on correction made and judge if the instruments brought out adequately objective of the study.

3.5.3 Reliability of Instruments

Reliability is the proportion of variance attributed to the true measurement of a variable and estimates the consistency of such measurements overtime (De Vellis, 1991). Researcher used the split half technique of assessment because only one testing session was required. Moreover, this tactic would eliminate errors due to the participation ease in recalling first test responses. The split half procedures was based upon a correlation between obtained half test scores, a correlation was needed to ascertain the reliability of the entire test. The spearman brown prophecy formula was used to make corrections in the following manners.

$$R = \frac{2r}{1+r}$$

Where

R=is the corrected reliability coefficient.

r = is the reliability coefficient from original calculation.

3.6 Data Collection Procedure.

The researcher obtained an introductory letter from the university and a permit from National council of science and Technology in order to collect data. The researcher recruited two research assistants who underwent a vigorous training on research ethics, data collection process and how to use data collection tool. The researcher secured appointment days to administer study from the department of environment in the Kericho County government, KEWASCO, and NEMA. For high return rate of questionnaires, the researcher and research assistants interviewed respondents in person, make the research questions clearly and to the point, gave a brief to respondents on the purpose of study before collecting data and give assurance of total confidentiality to respondents.

3.7 Data Analysis Technique

After the completion of data collection using questionnaires, field editing was done to bring instruments together in order to minimize errors and make sure the instruments contained the required information. Then the data was categorized and coded. Data was then entered into Microsoft access database and cleaned. This was followed by analysis using Microsoft Access and SPSS. The description of the responses and analysis of content was done to give intention findings.

Data was reported using descriptive statistics such as frequencies and percentage counts and presented using frequency and percentage tables, commutative mean and standard deviation. Correlation, Pearson correlation was used to compare the strength of independent variable and independent variable.

3.8 Ethical issues in research

The protection of the rights and welfare of the respondents was the main role of the researcher and the researcher assistants. The researcher ensured that the privacy of the respondents and confidentiality was upheld during the entire process and period of the study. Respondents were identified by only study file numbers to make sure their personal identity was not concealed. For participants, it was by his/her own consent and their withdrawal if they want from the study was under no restrictions or conditions.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION OF THE FINDINGS

4.1 Introduction

This chapter presents and analyzes the data collected and discusses it accordingly. First, the demographic profile of respondents was analyzed and presented using frequency tables and percentages. Secondly, the data related to organizational systems, infrastructure, human resource and financial planning factors that influence waste management are presented and analyzed. For presentation and analysis, mean and standard deviation of these factors are utilized. Finally, discussions are drawn from the data presented and analyzed.

4.2 Questionnaire Return rate

The distributed questionnaires were 120 targeting the department of Environment, Kericho County, KEWASCO and NEMA employees. The questionnaires that were properly filled and collected are 114. This amounted to 95.0% of the total respondents, which is adequate to make the analysis. All the discussions were ensued from this group of respondents.

The rate of response based on gender is summarized as shown in Table 4.1

Table 4.1Questionnaire Return rate

Gender	Frequency	Percentage
Male	60	52.6
Female	54	47.4
Total	**114**	**100.0**

As can be seen from table 4.1.1, male respondents were 60 (52.6%) whereas females were 54 (47.4%).

4.3 General demographic information

This section presents the general demographic information of the respondents.

4.3.1 Demographic data on age

The age bracket of the respondents is summarized in Table 4. 2

Table 4. 2: Demographic data on age

Age	Frequency	Percentage
20 – 25 Years	33	28.9
26 – 30 Years	23	20.2
31 – 35 Years	18	15.8
36 – 40 Years	23	20.2
Over 40 Years	17	14.9
Total	**114**	**100.0**

Majority of the respondents were within the age bracket of 20 – 25 years (28.9%) followed by those under the categories of 26 – 30 years and 36 – 40 years (20.2%). The remaining 15.8% and 14.9% of the respondents were in category 31 - 35 years and over 40 years respectively.

4.3.2 Demographic data on education level

The highest education level attained by the respondents is summarized in Table 4. 3

Table 4.3: Demographic data on education level

Education Level	Frequency	Percentage
Certificate	12	10.5
Diploma	33	28.9
Higher Diploma	20	17.6
Degree	43	37.7
Masters	6	5.3
PhD	-	-
Total	**114**	**100.0**

With regard to education level of the respondents, the table shows most were degree holders 37.7%. Those with diploma 28.9%, higher Diploma 17.6% and certificate level 10.5% closely follow this. It was only 5.3% with masters and no respondent with a PhD.

4.3.3 Demographic data on working experience

The researcher sought to find out the working experience of the respondents because this could influence the organizational related factors influencing waste management. The results are presented in Table 4.4

Table 4.4: Demographic data on working experience

Working Experience	Frequency	Percentage
Below 2 Years	34	29.8
3 – 5 Years	35	30.7
6 – 10 Years	19	16.7
Over 10 Years	26	22.8
Total	**114**	**100.0**

The working experience of the respondents in the organization shows that the majority have worked for 3 – 5 years (30.7%) and closely followed by those who have worked below 2 years (29.8%). The remaining 22.8% and 16.7% of the respondents have worked in the organization over 10 years and 6 – 10 years respectively.

4.3.4 Demographic data on terms of service

Researcher sought to find out the terms of service of the respondents and the results are presented in Table 4.5.

Table 4.5: Demographic data on terms of service

Terms of service	Frequency	Percentage
Temporary	43	37.8
Casual	3	2.6
Permanent	65	57.0
Contract	3	2.6
Total	**114**	**100.0**

When we see their terms of service, it is clear that more than half of the total respondents were permanent (57.0%). Those in temporary terms (37.8%) follow this and a tie between the casual and contract set (2.6%).

4.3.5 Demographic data on designation Level

It is crucial to know whether designation level in management of Organizations could influence the organizational related factors influencing waste management. Table 4.6 present the results.

Table 4.6: Demographic data on designation Level

Designation Level	Frequency	Percentage
Senior Management	9	7.9
Middle Management	44	38.6
Clerical	45	39.5
Other	16	14.0
Total	**114**	**100.0**

The clerical level tops the list with 39.5%. Middle level management (38.6%) closely follows. Other levels were 14.0%, which comprise of mainly students. The senior Level management was the least with 7.9%.

4.4 Organizational system factors and waste management

Table 4.7 is a summary of Organizational system factors that influence waste management

Table 4.7: Organizational system factors and waste management

Organizational system factors	Mean	Standard Deviation
The policies present are adequate in management of waste	3.89	1.028
The Organization has management structures that are efficient in delivery and management of waste	3.73	1.007
The Organization is up to date with technologies that efficiently handle waste management	3.78	1.143
The participation of the public is usually involved in decision making processes	3.79	1.093
The roles of every personnel in the organization are well defined in the Organization structure	4.00	1.105

The procedures put in place in the organization are efficient in handling waste management matters.	3.81	1.038
Cumulative Mean/Standard Deviation	**3.83**	**0.097**

Table 4.7 clearly shows that the respondents agreed that the policies present in the organization were adequate in management of waste. It shows a mean score of 3.89 and a standard deviation of 1.028. Therefore, the average score of the respondents is 'agree' with little deviations among them. As the mean score (3.73) and standard deviation (1.007) in the table show, the Organization has management structures that were efficient in delivery and management of waste is agreed by the respondents. A mean score of 3.78 and a standard deviation of 1.143 in the table depicted that the respondents agreed that the Organization was up to date with technologies that efficiently handle waste management. The table further illustrate that the respondents agreed that the participation of the public was usually involved in decision-making processes of the organization. The respondents view had a mean score (3.79) and standard deviation (1.093). Majority of respondents agreed that the roles of every personnel in the organization were distinct in the Organization structure. Mean score of 4.00 and a standard deviation of 1.105 describe that view. The table show, the respondents agreed that the procedures put in place in the organization were efficient in handling waste management matters. The mean score of 3.81 and standard deviation of 1.038 means they 'agreed'.

4.7.1 Correlation of organization system factors and management

	Waste management	Organizational system
Pearson correlation Sign. (2-tailed) N	1 114	0.728 0.163 114
Pearson correlation Sign. (2-tailed) N	0.728 0.163 114	1 114

From table 4.7.1 it shows that there is a strong relationship between organizational

systems and waste management indicated by 0.728.

4.5 Infrastructure factors and waste management

The following Table 4.8 summarizes the infrastructure factors that could

influence waste management.

Table 4.8: Infrastructure factors and waste management

Infrastructure factors	Mean	Standard Deviation
There are enough Infrastructures in place to deal with waste management	3.77	1.129
The Organization has modern infrastructures to handle waste management efficiently	3.75	1.149
The waste disposal sites are situated in convenient places for the public to use	3.73	1.312
The private sector is involved in waste management by contributing to Organizational infrastructures	4.04	1.167
There are programs on public awareness on utilizing dumping bins and other public support infrastructures.	3.96	1.189
Cumulative Mean /Standard Deviation	**3.85**	**0.141**

The mean score (3.77) and standard deviation (1.129) of the respondents in table

4.8 shows an agreement that there were enough Infrastructures in place to deal with

waste management in the organization. The respondents agreed that the Organization had modern infrastructures to handle waste management efficiently. Mean score of 3.75 and standard deviation of 1.149 captures this view. The respondents further agreed that the waste disposal sites were in convenient places for the public to use with a mean of (3.73) and standard deviation of (1.312). The respondents agreed with a mean of 4.04 and standard deviation of 1.167 that the private sector was involved in waste management by contributing to Organizational infrastructures. The mean score (3.96) and standard deviation (1.189) justifies the respondents agreement that there were programs on public awareness on utilizing dumping bins and other public support infrastructures.

Table 4.8.1 Correlation of Infrastructure factors and waste management

	Waste Management	Infrastructure factors
Pearson correlation	1	0.811
Sign. (2-tailed)		0.096
N	114	114
Pearson correlation	0.811	1
Sign. (2-tailed)	0.096	
N	114	114

From table 4.8.1 the correlation shown between the two variables is very strong that is 0.811.

4.6 Human resource factors and waste management

The researcher sought the human resource factors that may influence waste management. Table 4.9 presents the results.

Table 4.9: Human resource factors and waste management

Human resource factors	Mean	Standard Deviation
Management offers regular training on health and safety to all staff of the organization	4.07	0.993
The staff are subject to performance contract and well remunerated	4.06	0.962
The personnel in the organization are adequate to handle waste management in the Municipality	3.64	1.106
Management offers free training and capacity building to personnel	3.65	1.197
There are enough waste experts in the Organization	3.19	1.309
I am usually involved in the Organization decision making	3.17	1.275
Cumulative Mean /Standard Deviation	**3.63**	**0.396**

Table 4.9 clearly portrays that management offered regular training on health and safety to all staff of the organization. The mean score (4.07) and standard deviation (0.993) affirms this agreement. Agreement was evident among the respondents with a mean score of 4.06 and standard deviation of 0.962 that working staff were subjective to performance contract and well remunerated. The slight agreement on adequacy of personnel to handle waste management in the municipality was justified by the calculated mean (3.64) and standard deviation (1.106) of the respondents. In addition, the respondents trivially 'agreed' that management offered free training and capacity building to personnel with a mean of 3.65 and standard deviation of 1.197. The respondents were 'undecided' if there were enough waste experts in the Organization verified by the calculated mean (3.19) and standard deviation (1.309). Finally, on human resource factors the respondents were 'undecided' on involvement in the organization decision making. A mean score of 3.17 and standard deviation of 1.275 point this out.

Table 4.9.1 Correlation of Human resource factors and waste management

	Waste Management	Human resource
Pearson correlation Sign. (2-tailed) N	1 114	0.568 0.317 114
Pearson correlation Sign. (2-tailed) N	0.568 0.317 114	1 114

Table 4.9.1 indicated that the correlation was slightly weak compared to all the other variables in relation to waste management as depicted by value of r=0.568.

4.7 Financial planning factors and waste management

Table 4.10 is a summary of the financial planning factors that could influence waste management in Kericho municipality.

Table 4.10: Financial planning factors and waste management

Financial planning factors	Mean	Standard Deviation
I am usually involved in budgeting and cost control in the Organization	3.30	1.356
The finance allocated to the Organization is adequate to deal with waste management	3.77	1.137
The Organization has financial monitoring tools	3.75	1.118
The private sector do aid the Organization in terms of financial grants and Aids	3.88	1.138
The budget allocation to various activities in the organization is adequate	3.48	1.091
The revenue collection system from waste is efficient	3.78	1.196
Cumulative Mean /Standard Deviation	**3.66**	**0.221**

Table 4.10 shows a mean of 3.30 and standard deviation of 1.356 which implies that the respondents were undecided if they were involved in budgeting and cost control in the Organization. The mean score 3.77 and standard deviation 1.137 shows that these respondents agreed that finance allocated to the Organization was adequate to deal with waste management. With regard to availability of financial monitoring tools in the organization, the respondents calculated mean of 3.75 and standard deviation of 1.118 proves they agreed. These respondents agreed that private sector do aid the Organization in terms of financial grants and Aids. This was evident in table 4.2.1 showing a mean of 3.88 and a standard deviation of 1.138. Concerning adequacy of budget allocation to various activities in the organization the respondents almost agreed with a mean of 3.48 and a standard deviation of 1.196. Lastly, a mean of 3.78 and a standard deviation of 1.196 imply that the respondents agreed that the revenue collection system from waste was efficient in the organization.

Table 4.9.1 Correlation of Financial planning factors and waste management

	Waste Management	Human resource
Pearson correlation	1	0.759
Sign. (2-tailed)		0.137
N	114	114
Pearson correlation	0759	1
Sign. (2-tailed)	0.137	
N	114	114

Table 4.9.1 shows that the correlation between the two variable is strong as indicated by r= 0.759.

4.8 Efficiency of Waste Management

The researcher sought from the respondent the efficiency of waste management in their organization and the results was shown in table 4.11

Table 4.11 Efficiency of Waste Management

	Frequency	Percentage
Strongly disagree	2	1.75
Disagree	4	3.51
Undecided	19	13.19
Agree	86	75.44
Strongly agree	3	2.63
Total	114	100

Table 4.11 shows that a percentage of 1.75 strongly disagree that there was efficiency of waste management in their organization 3.51% disagree, 13.19 were undecided, 75.44% agree while 2.63% strongly agree. From the analysis, it depicted that majority of the respondents agree that the organization is efficient in waste management.

4.8 Comparison and correlation of factors that influence waste management

Even though, all the organizational systems, infrastructure, human resource and financial planning factors influence waste management, this does not necessarily mean that all have equal impact.

Table 4.12: Comparison of major factors influencing waste management

Factor	Grand Mean	Grand Standard Deviation
Organizational system factors	3.83	0.097
Infrastructure factors	3.85	0.141
Human resource factors	3.63	0.396
Financial planning factors	3.66	0.221

The mean or cumulative Mean (3.63) and grand standard deviation (0.396) in the table 4.2.2 clearly depicts that the human resource factors were the most sever followed by the financial planning, organizational and infrastructure factors. Financial

planning factors had a grand mean (3.66), grand standard deviation (0.221), organizational system factors had a grand mean (3.83) and grand standard deviation (0.097), and lastly, infrastructure factors had a grand mean (3.85) and grand standard deviation (0.141).

It is evident from Appendix V that there were both positive and negative correlations ranging from -1 to +1 among the four categories of organizational related factors influencing waste management in Kericho Municipality. Nearer the correlation to +1 or -1 implies possibilities in the correlated variable were very high while it is low when the correlation coefficient is nearer zero. The flagged (** Correlation is significant at 0.01 level) are high whereas (* Correlation is significant at 0.05 level) were lower respectively. The pearson correlation shows there was statistical relationship among the factors.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the findings, conclusion and recommendations from the study findings, and finally the suggestions for further research.

5.2 Summary of the findings

The purpose of the study was to objectively to assess organizational related factors influencing waste management in Kericho municipality. The questionnaires that were properly filled and collected were 114. This amounts to 95.0% of the total respondents, which was adequate to make the analysis. Most of the respondents were male (52.6%) whereas females were (47.4%). Majority of the respondents were within the age bracket of 20 − 25 years (28.9%). With regard to education level of the respondents, most were degree holders 37.7% and there was no respondent with a PhD. The working experience of the respondents in the organization shows that the majority had worked for 3 − 5 years (30.7%). More than half of the total respondents had permanent terms of service (57.0%). The clerical level tops the list concerning position of respondents with 39.5% and closely followed with middle level management (38.6%).

The first objective of the study was to determine how organizational systems influence waste management in Kericho municipality. The respondents generally agreed (grand: $\bar{X}$= 3.83 & s = 0.097) with the organizational system factors which includes: the policies present were adequate in management of waste, the Organization had management structures that were efficient in delivery and

management of waste, the Organization was up to date with technologies that efficiently handle waste management, the public participation was usually employed in decision making processes of organization, the roles of every personnel in the organization were well defined in the Organization structure and lastly that the procedures put in place in the organization were efficient in handling waste management matters.

The second objective was to assess the extent to which infrastructure influences waste management in Kericho Municipality. The respondents agreed (grand: $\bar{X} = 3.85$ & $s = 0.141$) that: there were enough Infrastructures in place to deal with waste management, the Organization had modern infrastructures to handle waste management efficiently, there were programs on public awareness on utilizing dumping bins and other public support infrastructures and finally that the private sector was involved in waste management by contributing to Organizational infrastructures and the waste disposal sites were situated in convenient places for the public to use.

With regard to human resource factors as the third objective influencing waste management, the respondents though with an agreement (grand: $\bar{X} = 3.63$ & $s = 0.396$), they were 'undecided' if there were enough waste experts in the Organization as verified by the calculated mean (3.19) and standard deviation (1.309) and further 'undecided' on involvement in the organization decision making as pointed out by a mean score of 3.17 and standard deviation of 1.275.

Despite agreement (grand $\bar{X} = 3.66$ & $s = 0.221$) on financial planning factors., the respondents were ambivalent on their involvement in budgeting and cost control in the Organization as justified by a mean of 3.30 and standard deviation of 1.356.

The financial planning factors in question includes; the finance allocated to the Organization was adequate to deal with waste management, the Organization had financial monitoring tools, the private sector did aid the Organization in terms of financial grants and Aids, the budget allocation to various activities in the organization was adequate and the revenue collection system from waste was efficient.

Pertaining capacity of the organization to handle waste management, majority (89.5%) of the respondents were of the view that the Organization collected waste daily whereas; (7.8%) settled on after every 2 days, (1.8%) on weekly basis and (0.9%) fortnightly. Most respondents (77.2%) were of the opinion that the Organization had an efficient sewerage system in place, (16.7%) rated it as fair, (3.5%) rated it as poor and 2.6% rate is as very effective. Despite a total agreement on the availability of the Monitoring and Evaluation tools used by the Organization, 58.7% of the respondents rated them to a considerable extent (i.e. $66\% - 80\%$), 37.7% rated them to some extent (i.e. 50% - 65%) and a tied percentage (1.8%) for those who rated them below (50%) and to a great extent (i.e. Above 80%).

In comparison, out of the four organizational related factors, human resource factors were ranked the most sever (grand: $\bar{X} = 3.63$ & $s = 0.396$). Financial planning factors (grand: $\bar{X} = 3.66$ & $s = 0.221$), organizational factors (grand: $\bar{X} = 3.83$ & $s = 0.097$) and lastly, infrastructure factors (grand: $\bar{X} = 3.85$ & $s = 0.141$) follows respectively. It is evident from Appendix V that there were both positive and negative correlations ranging from -1 to +1 among the four categories of organizational related factors influencing waste management in Kericho Municipality. Nearer the correlation to +1 or -1 implies possibilities in the correlated variable were very high while it is low when the correlation coefficient is nearer zero. The flagged (** Correlation is

significant at 0.01 level) are high whereas (* Correlation is significant at 0.05 level) were lower respectively. The Pearson correlation shows there was statistical relationship among the factors.

5.3 Conclusion

It was evident from the findings that out of the four organizational related factors, human resource factors stand to be the most sever. Financial planning factors, organizational factors and lastly, infrastructure factors follow respectively. With regard to human resource factors, the respondents despite an agreement they were 'undecided' if there were enough waste experts in the Organization and further 'undecided' on involvement in the organization decision making. Demographic profile of the respondents amplifies the human resource factor on two main grounds; skewed level of education and working experience. It is only 5.3% with masters and no respondent with a PhD. The working experience of the respondents in the organization shows that the majority have worked for $3 - 5$ years (30.7%) and closely followed by those who have worked below 2 years (29.8%). Even though there was agreement on financial planning factors, the respondents are ambivalent on their involvement in budgeting and cost control in the Organization.

The waste management regime in developing countries for example in Kenya it is seldom integrated, and there is often no clear assignment of responsibilities for tasks and schedules among the organizations involved. Contrary to this expectation, the roles of every personnel in Kericho Municipality were well defined in the Organization structure. Pertaining capacity of the organization to handle waste management, majority (89.5%) of the respondents were of the view that the Organization collected waste daily. Most respondents (77.2%) were of the opinion

that the Organization had an efficient sewerage system in place. Despite a total agreement on the availability of the Monitoring and Evaluation tools used by the Organization, 58.7% of the respondents rated them to a considerable extent (i.e. 66% – 80%), 37.7% rated them to some extent (i.e. 50% - 65%) and a tied percentage (1.8%) for those who rated them below (50%) and to a great extent (i.e. Above 80%). The Pearson correlation shows there was statistical relationship among the organizational factors.

5.4 Recommendations

Based on the findings of the study, the researcher recommends:

i. The need for more trainings on safe waste handling techniques using modern technology

ii. Enrolment of more experienced waste experts in Kericho municipality

iii. There is also need to involve all stakeholders concerned with waste management in budgeting, cost control and decision-making in the Organization.

5.5 Contribution to the body of knowledge

Objective	Contributions to the body of knowledge
i. To determine how organisational systems influence waste management in Kericho municipality	Though technology is up to date, there is always a new idea emerging to efficiently handle waste management
ii. To assess the extent at which infrastructure influence waste management in Kericho municipality	Despite being enough from the findings, population growth rate may affect the response in future.
iii. To investigate human resource	The organization needs expertise in the

	influence on waste management in Kericho municipality.	field of waste management.
iv.	To establish the level at which financial planning influence waste management in Kericho municipality.	Tax collection need to be fully digitalize to catch up with sustainable development goals and for efficiency in monitoring and evaluation

5.6 Suggestions for Further Studies

The researcher suggested for further studies on the same waste management in order to be acceptable with the 2030 vision and sustainable development goals.

REFERENCES

Coetzee, B. et al (2014). *Why is Municipal Waste Management Reform so difficult? An Analysis of Dynamic and Social Complexities*. Proceedings of the 20th WasteCon Conference6-10 October 2014. Somerset West, Cape Town.

ECO Canada (2010). Municipal Water and Waste Management Labour Market Study Environmental Labour Market (ELM) Research.

EMCA (1999). The Environmental Management and Co-ordination Act, 1999 No 8 of 1999 Kericho urban population. En.wikipedia.org/wiki/Kericho County

EMCA (1999).The Environmental Management and Co-Ordination Act, 1999No 8 of 1999

Henry, R.K., Zhao, Y.S. & Dong, J. (2006). Municipal solid waste management challenges in developing countries - Kenyan case study. *Waste Management 26(1), 92-100.*

Holmes, J. D., and McClaskey, D. J.,(1992) "Improving Research Using Total Quality Management," in Proc. Juran Inst. R&D Quality Symp., Chicago.

Kericho urban population. En.wikipedia.org/wiki/Kericho County

Kui Li (2007). Study of Influence Factors in Municipal Solid Waste Management Decision-making. Royal Institute of Technology.

Kui Li (2007). Study of Influence Factors in Municipal Solid Waste Management Decision-making. Royal institute of Technology.

Ministry of Environment and Mineral Resources (2011). Draft National Education for Sustainable Development Policy.

Ministry of Environment and Mineral Resources (2011). Draft National Education for Sustainable Development Policy.

Puopiel, F. (2010) *Solid Waste Management in Ghana: The Case of Tamale Metropolitan Area.* A master‟s thesis presented for the department of development policy and planning, Kwame Nkrumah University of Science and Technology. Available at: http://dspace.knust.edu.gh (Accessed date: 10 may 2011)

Schübeler, P. et al (1996). Urban Management and Infrastructure: Conceptual Framework for Municipal Solid Waste Management in Low-Income Countries. UNDP/UNCHS (Habitat)/World Bank/SDC, Working Paper No. 9.

United Nations Environment Programme, (2013). Guidelines for National Waste Management Strategies: Moving from challenges to opportunities.

United Nations Environment Programme, (2013).Guidelines for National Waste Management Strategies: Moving from challenges to opportunities.

USO, W, & Onen, D (2009) A General Guide to Writing Research Proposal and report. A Handbook of Beginning Researchers, Revised

Western Australian Waste Authority, (2012).Western Australian Waste Strategy: "Creating the Right Environment".

Zurbrügg, C. (2003). Urban solid waste management in low-income countries of Asia how to cope with the garbage crisis. *Presented for: Scientific Committee on*

Problems of the Environment (SCOPE) Urban Solid Waste Management Review Session, Durban, South Africa

Zurbrügg, C. and Schertenleib, R. (1998) *Main problems and issues of municipal solid waste management in developing countries: with emphasis on problems related to disposal by landfill*. Presented at the third Swedish landfill research symposia, October 1998 Lulea, Sweden

Mugenda, O. M. & Mugenda, A. G. (2003). *Research Methods: Quantitative and Qualitative Approaches.* Nairobi: African Center for Technology Studies (ACTS) Press.

Al-Khatib, I. A., Monou, M., Abu Zahra, A. F., Shaheen, H. Q., and Kassinos, D. (2010). Solid waste characterization, quantification and management practices in developing countries. A case study: Nablus district – Palestine. Journal of Environmental Management, 91(5), 1131-1138.

Asase M., Yanful, E. K., Mensah, M., Stanford, J., and Amponsah, S. (2009). Comparison of municipal SWMS in Canada and Ghana: A case study of the cities of London, Ontario, and Kumasi, Ghana. Waste Management, 29(10), 2779-2786.

Hazra, T., and Goel, S. (2009). Solid waste management in Kolkata, India:

Practices and challenges. Waste Management, 29(1), 470-478.

Mwanthi, M., and Nyabola, L. (1997). Solid waste management in Nairobi City: Knowledge and attitudes. Journal of Environmental Health, 60(5), 23.

Scarlett, Lynn, and Shaw, Jane S. (1999). Environmental progress: What every executive should know. PERC Policy Series PS-15. Bozeman, MT: Political Economy Research Center. April.

APPENDIX I: QUESTIONNAIRE

Instructions

Answer the following questions by ticking where appropriate **DO NOT** write your name anywhere in this questionnaire; and lastly, Answers given will be treated with utmost confidence and thus will be used for academic purposes ONLY.

SECTION: A: BACKGROUND INFORMATION OF THE RESPONDENT

1. Indicate your Gender

   Male   [   ]   Female   [   ]

2. Which age, bracket do you fall in?

      20 – 25 years   [   ]   26 – 30 years   [   ]

      31 – 35 years   [   ]   36 – 40 years   [   ]

      40 years & above [   ]

3. Which level of education did you attain?

      Certificate level   [   ]   Diploma level   [   ]

      Degree level   [   ]   Higher Diploma   [   ]

      Masters level   [   ]   phd   [   ]

      Others (specify) ....

4. For how long have you been working in this organization?

Below 2 years   [   ]   3 – 5 years   [   ]

6 – 10 years   [   ]   over 10 years   [   ]

5. Indicate your terms of service.

   Temporary   [   ]   Casual   [   ]

   Permanent   [   ]   Contract terms   [   ]

6. What is your position in the organisation?

   Senior management level [   ]   Middle Management [   ]

   Clerical [   ]

Other (specify) ....

SECTION B: Organizational System

To what extent do you agree with the following organizational system as a factor influencing waste management? Key: use the rating provided,

Strongly Agree (5), Agree (4), Undecided (3), Disagree (2), Strongly Disagree (1)

Organizational factors	1	2	3	4	5
The policies present are adequate in management of waste.					
The organisation has management structures that are efficient in delivery and management of waste.					
The Organisation is up to date with technologies that efficiently handle waste management.					
The participation of public is usually involved in decision making processes.					
The roles of every personnel in the organisation are well defined in the organisation structure.					
The procedures put in place in the organisation are efficient in handling waste management matters.					

SECTION C: INFRASTRUCTURE

To what extent do you agree with the following infrastructure as a factor influencing waste management? Key: use the rating provided, Strongly Agree (5), Agree (4), Undecided (3), Disagree (2), Strongly Disagree (1)

Infrastructure factors	1	2	3	4	5
There are enough infrastructures in place to deal with waste management.					
The organisation has modern infrastructure to handle waste management efficiently.					
The waste disposal sites are situated in convenient places for the public to use.					
The private sector is involved in waste management by contributing to organisational infrastructure.					
There are programs on public awareness on utilizing dumping bins and other public support infrastructure.					

SECTION D: HUMAN RESOURCE

Rate the following statement on the extent to which human resource influence waste management

Key: 1= strongly agree, 2= agree, 3= undecided, 4 =disagree and 5 = strongly disagree

Statement	1	2	3	4	5
Management offers regular training on health and safety to all staff of the organisation.					
The Staff are subjected to performance contract and well remunerated.					
The personnel in the organization are adequate to handle waste management in the municipality.					
Management offers free training and capacity building to personnel					
There are enough waste management experts in the organisations.					
I am usually involved in the organisation decision making.					

SECTION E: FINANCIAL PLANNING

Rate the following statement on the extent to which financial planning influence waste management

Key: 1= strongly agree, 2= agree, 3= undecided, 4 =disagree and 5 = strongly disagree

Statement	1	2	3	4	5
I am usually involved in budgeting and cost control in the organisation.					
The finance allocated to the organisation is adequate to deal with waste management.					
The organisation has financial monitoring tools.					
The private sector do aid the organisation in terms of financial grants and Aid.					
The budget allocation to various activities in the organisation is adequate.					
The revenue collection system from waste is efficient.					

SECTION F: Waste Management

The efficiency of waste management in your organization is significantly high. In your own opinion rate your organization by ticking your desired level of agreement.

Strongly disagree   ( )

Disagree   ( )

Undecided   ( )

Agree   ( )

Strongly agreed   ( )

Thanks you for sparing your time to fill this questionnaire

SUMMARY OF RESPONSES OF THE LIKERT QUESTIONS

Responses	Questions on Organizational factors					
	2.1	**2.2**	**2.3**	**2.4**	**2.5**	**2.6**
1	4	1	4	3	4	4
2	9	18	15	15	9	10
3	16	17	20	19	18	20
4	52	53	38	43	35	50
5	33	25	37	34	48	30

Responses	Questions on Infrastructure factors				
	3.1	**3.2**	**3.3**	**3.4**	**3.5**
1	5	6	11	6	8
2	12	13	13	9	9
3	22	17	12	12	7
4	40	45	38	35	45
5	35	33	40	52	45

Responses	Questions on Human resource factors					
	4.1	**4.2**	**4.3**	**4.4**	**4.5**	**4.6**
1	3	3	6	9	14	15
2	7	8	11	12	23	23
3	13	7	28	18	27	20
4	47	57	42	46	27	40
5	44	39	27	29	23	16

Responses	Questions on Financial planning factors					
	5.1	**5.2**	**5.3**	**5.4**	**5.5**	**5.6**
1	13	5	4	6	5	7
2	27	14	16	9	20	13
3	13	17	16	18	22	15
4	35	44	46	41	49	42
5	26	34	32	40	18	37

Generally, a questionnaire with α of 0.8 is considered reliable (Field, 2009). Hence, this questionnaire certainly is reliable, since α is 0.83 (see Reliability Statistics table).

Case Processing Summary			
		N	%
C ases	Valid	1 14	1 00.0
	Excl uded[a]	0	. 0
	Total	1 14	1 00.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbac h's Alpha	N of Items
.830	29

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good/reliable
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Gender	98.86	182.830	.143	.830
Age bracket	97.61	184.805	-.048	.842
Level of Education	97.35	179.593	.134	.832
Working experience in the Organization	98.01	185.726	-.064	.839
Terms of service	98.09	181.833	.081	.833
Position in the Organization	97.74	187.930	-.158	.838
The policies present are adequate in Management of waste	96.45	168.391	.583	.817
The Organization has management structures that are efficient in delivery and management of waste	96.61	168.914	.577	.817
The Organization is up to date with technologies that efficiently handle waste management	96.55	167.382	.552	.817
The participation of public is usually involved in decision making processes	96.54	167.914	.562	.817
The roles of every personnel in the organization are well defined in the organization structure	96.33	167.746	.561	.817
The procedures put in place in the organization are efficient in handling waste management matters	96.53	167.614	.608	.816

There are enough Infrastructures in place to deal with waste management	96.56	166.178	.603	.815
The Organization has modern infrastructures to handle waste management efficiently	96.58	167.591	.542	.818
The waste disposal sites are situated in convenient places for the public to use	96.61	166.684	.490	.819
The private sector is involved in waste management by contributing to Organizational infrastructures	96.30	169.963	.450	.821
There are programs on public awareness on utilizing dumping bins and other public support infrastructures.	96.37	168.925	.475	.820
Management offers regular training on health and safety to all staff of the organization	96.26	170.408	.526	.819
The staff are subject to performance contract and well remunerated	96.27	173.917	.401	.823
The personnel in the organization are adequate to handle waste management in the Municipality	96.69	166.693	.599	.816
Management offers free training and capacity building to personnel	96.68	172.094	.366	.824
There are enough waste experts in the Organization	97.14	170.281	.381	.823
I am usually involved in the Organization decision making	97.17	174.990	.249	.829
I am usually involved in	97.04	172.459	.301	.827

budgeting and cost control in the Organization				
The finance allocated to the Organization is adequate to deal with waste management	96.56	177.116	.219	.829
The Organization has financial monitoring tools	96.58	173.945	.333	.825
The private sector do aid the Organization in terms of financial grants and Aids	96.46	175.401	.276	.827
The budget allocation to various activities in the organization is adequate	96.85	179.986	.131	.832
The revenue collection system from waste is efficient	96.55	175.046	.270	.828

MINISTRY OF EDUCATION

STATE DEPARTMENT OF EDUCATION

Email:cdekerichocounty@gmail.com
When Replying Please Quote:

County Education Office
P.O BOX 149
KERICHO

Ref: No.KER/C/ED/GC/2/VOL.I/ 349

21st July, 2016.

TO WHOM IT MAY CONCERN.

RE: RESEARCH AUTHORIZATION – AGNESS JEPLETING SAINAH.

The above named had been authorized by National Commission for Science Technology and Innovation to conduct research on *'Organizational related factors influencing Waste Management in Kericho Municipality, Kericho County* for a period ending 10th May,2017.

Any assistance accorded to her will be highly appreciated.

P.P.

Hellen Nyang'au (Mrs)
County Director of Education
KERICHO COUNTY.

THE PRESIDENCY
MINISTRY OF INTERIOR AND CO-ORDINATION OF NATIONAL GOVERNMENT

Telegrams: ....
Telephone: Kericho 20132
When replying please quote
kerichocc@yahoo.com

COUNTY COMMISSIONER
KERICHO COUNTY
P.O. BOX 19
KERICHO

REF: MISC.19 VOL.II/ (186)

22ND November, 2016

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION —AGNES JEPLETING SAINAH

Authorization has been granted to Agnes Jepleting Sainah by National Commission for Science, Technology and Innovation, as per a letter Ref:No. NACOSTI/P/16/99181/10823 dated 10th May, 2016 to carry out research on *"Organizational related factors influencing waste management in Kericho Municipality,Kericho County,"* for a period ending 10TH May, 2017.

Kindly accord her the necessary assistance.

ANGELA WANYAMA
FOR: COUNTY COMMISSIONER
KERICHO COUNTY

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Ref: No

Date:

NACOSTI/P/16/99181/10823

10ᵗʰ May, 2016

Agness Jepleting Sainah
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *"Organizational related factors influencing waste management in Kericho Municipality, Kericho County,"* I am pleased to inform you that you have been authorized to undertake research in **Kericho County** for the period ending **10ᵗʰ May, 2017.**

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

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Kericho County.

The County Director of Education
Kericho County.

THIS IS TO CERTIFY THAT:
MS. AGNESS JEPLETING SAINAH
of UNIVERSITY OF NAIROBI, 1790-20200
KERICHO, has been permitted to conduct
research in *Kericho County*

on the topic: *ORGANIZATIONAL*
RELATED FACTORS INFLUENCING WASTE
MANAGEMENT IN KERICHO
MUNICIPALITY, KERICHO COUNTY

for the period ending:
10th May, 2017

Permit No : NACOSTI/P/16/99181/10823
Date Of Issue : 10th May, 2016
Fee Recieved : Ksh 1000

....
Applicant's
Signature

....
Director General
National Commission for Science,
Technology & Innovation

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

NACOSTI

National Commission for Science,
Technology and Innovation

RESEARCH CLEARANCE
PERMIT

Serial No. A 9093

CONDITIONS: see back page