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DEPARTMENT OF LOCAL GOVERNANCE STUDIES

CHALLENGES FACED BY LOCAL AUTHORITIES IN SOLID WASTE

MANAGEMENT: A CASE OF BEITBRIDGE TOWN COUNCIL.

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SUBMITTED IN PARTIAL FULLFILLMENT OF THE BACHELOR OF SOCIAL

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I, hereby declare that this thesis submitted for assessment is my own composition. I generated all the information presented, except where clearly and specifically acknowledged, at Midlands State University, Department of Local Governance (LGS). This work has not been presented in the fulfillment of a similar or related degree(s) programme.

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DEDICATION

Special dedications to my parents Mr and Mrs Mulaudzi for their support in my career they had the chance to witness the fruits of their hard work in me. Also to my beloved Wellington Mukanhaire, my brother Innocent and my little sister Progress Mulaudzi and my cousin Adylate Muvembi for with God nothing is impossible. Prayer is the answer to everything.

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ABSTRACT

Solid waste management has become a major public health and environmental concern in Zimbabwe is no exception. The magnitude of the problems being faced due to improper Solid Waste Management cannot be understated for example Open dumping and burning of municipal solid waste is a common phenomenon in most towns in Zimbabwe. The academic study regarding solid waste management has been widely researched focusing on larger cities like Harare by scholars (e.g.Tevera ,1991;DNR ,1994 ;Milgrud ,1995 ;Gandure ,1997 ;Mafusire ,1997;Jamare 1998 ; Kativu ,2001 ,Makwara and Magudu, 2013) hence there is lack of comparative research on small border towns. This shows that the existing research has not be exhaustive and is limited on geographical coverage .As a result ,there is lack of information on Solid waste management affecting small towns especially border towns. However in addressing this issue a research was conducted in Beitbridge. The aim was to assess the challenges in which Beitbridge town council face in addressing solid waste management, some of the challenges are poor management practices such as burning of municipal and illegal dumping, the council lacks machinery for refuse collection such as trucks, compactors etc., poor community engagement in solid waste due to ignorance and lack of awareness. A total of 30 questionnaires were given to the targeted population which includes residents and council staff. Interviews were also conducted. It was noted that the council is selling bins to the community at an unaffordable price; therefore some people are failing to purchase them, hence end up doing illegal dumping because they do not have the proper bins. The recommendation which was given is that the local authority to sell bins at an affordable price.

TABLE OF CONTENTS

RELEASE FORM.....	i
ACKNOWLEDGEMENTS.....	vi
ABSTRACT.....	vii
TABLE OF CONTENTS.....	viii
LIST OF TABLES.....	xi
LIST OF FIGURES.....	xii
LIST OF ACRONYMS.....	xiii
CHAPTER I.....	1
INTRODUCTION.....	1
1.0 Introduction.....	1
1.1 Background of the study.....	1
1.2 Problem statement.....	3
1.3 Research Objectives.....	3
1.4 Research Questions.....	4
1.5 Justification of Study.....	4
1.6 Delimitations of study.....	Error! Bookmark not defined.
1.7 Limitations of Study.....	5
1.8 Definitions.....	6
1.9 Summary.....	6
CHAPTER II.....	7
LITERATURE REVIEW.....	7
2.0 Introduction.....	7
2.1 Solid Waste.....	7
2.3 Categories and Main Types of Solid Wastes.....	8
2.4 Processes of Solid Waste Management.....	8
2.5 Sources of Waste Generation.....	9
2.6 Storage.....	9
2.7 Collection and Transportation.....	10
2.8 Recovery and Recycling.....	10
2.9 Disposal.....	10
2.10 Solid Waste Management in Developed Countries.....	10

2.11 Solid Waste Management in Third World Countries	11
2.12 Waste Management in Zimbabwe	14
2.13 Challenges of Solid Waste Management and its Impact on Health and the Environment in Zimbabwe.....	16
2.15 Waste collection, transfer and disposal in Zimbabwe	17
2.16 Major Factors that are Causing Local Authorities to Provide Poor Quality of Service Delivery	18
2.17 Legislative Framework	21
2.18 Local Authority by Laws on Waste Management	22
CHAPTER III	24
RESEARCH METHODOLOGY	25
3.1 Introduction	25
3.2 Research Methodology	25
3.3 Target Population.....	26
3.4 Sample Size	26
3.5 Sample Procedure.....	27
3.6 Data Collection Instrument.....	27
3.7 Interviews.....	28
3.7.1 Advantages of Interviews.....	28
3.7.2 Disadvantages of Interviews	28
3.8 Questionnaires	29
3.8 .1 Advantages of Questionnaires	29
3.8.2 Disadvantages of Questionnaires	29
3.9 Document Analysis.....	29
3.10 Data Presentation	30
3.11 Data Analysis	30
3.12 Data Reliability	30
3.13 Pre-Testing	30
3.14 Ethical Considerations.....	30
3.15 Summary	31
CHAPTER IV	32
DATA PRESENTATION AND ANALYSIS	32
4.0Introduction	32
4.1Response Rate.....	32
4.2Demographic Characteristics of Respondents.....	33
4.3Age of Respondents	34

4.3.1	Number of Years in the Organization	35
4.3.2	Number of Years in Which the Respondents Have Been Living in Beitbridge Town	36
4.4	Questionnaire Response Analysis	37
4.4.1	Access to the Service Provision.....	37
4.4.2	Density Suburb.....	39
4.4.3	Challenges Encountered	39
4.5	Suggestions from Respondents.....	45
4.6	Rating the Service Provision.....	46
4.7	Interview Response Analysis.....	47
4.7.1	Interview Response Rate of Beitbridge Town Council Employees	47
4.9	Effects and the Impacts of Ineffective Solid Waste for Waste Pickers and Communities.....	49
4.10	Strategies Used in Addressing the Challenges	50
4.10.1	Success of the Strategies Implemented.....	50
4.11	Measures Suggested by the Interviewees	50
4.12	Summary	51
CHAPTER V	.....	52
CONCLUSIONS AND RECOMMENDATION	.....	52
5.0	Introduction	52
5.1	Summary	52
5.2	Conclusion.....	53
5.3	Recommendations	53
REFERENCE LIST	.....	55
APPENDIX 1	.....	62
QUESTIONNAIRE FOR MIDDLE MANAGEMENT AND GENERAL STAFF	.....	62
APPENDIX 2	.....	65
QUESTIONNAIRE FOR THE RESIDENTS.....	65	
APPENDIX 3	.....	68
INTERVIEW GUIDE FOR EMPLOYEES.....	68	

LIST OF TABLES

Table 3.1 Showing Target Population.....	25
Table 4.1 Questionnaire completion rate.....	32
Table 4.1.2 Gender respondents of council staff.....	34
Table 4.5.1 Interview response rate.....	45
Table 4.5.2 Causes of ineffective solid waste	46

LIST OF FIGURES

Figure 4.1 Questionnaire completion rate by council staff.....	32
Figure 4.2.1 Gender of respondents of council staff.....	34
Figure 4.3 Age of respondents.....	35
Figure 4.3.1 Number of years in the organization.....	36
Figure 4.3.2 Number of years respondents have lived in the town.....	37
Figure 4.4.1 Access to services.....	38
Figure 4.4.4 Challenges encountered by the local authority.....	41
Figure 4.4.5 Responses on strategies.....	42
Figure 4.4.6 Rate of services offered.....	45
Plate 4.5.6 A photograph of an illegal dumping.....	49

LIST OF ACRONYMS

ACRONYM

BTC	Beitbridge town council
EMA	Environmental Management Agency
Et al	And Others
MSW	Massive Solid Waste
SWM	Solid Waste Management
UNEP	United Nations Environmental Programme

CHAPTER I

INTRODUCTION

1.0 Introduction

Solid waste management is one of the major challenges facing most of the countries around the world and Zimbabwe is no exception. Gukurume (2011) notes that solid waste management has been a main issue of concern in most governments, cities and municipalities. Rapid movement of people from rural areas to urban areas in search of greener pastures, hyperinflation and lack of financial capital by the municipalities has resulted in the failure of the councils in providing adequate service to their residents.

In Zimbabwe statistics show that 60% of solid waste is produced in cities and it is dumped in open sites posing a great threat to the environment and the people (Masocha 2002). Urban local authorities in Zimbabwe are unable to manage waste collection and recycling systems including Beitbridge. This research seeks to find out the challenges faced by Beitbridge town council in solid waste management. However, it is worth to note that waste management is in essence public service delivery and it is what makes urban

The focus of this chapter is to introduce the study as a whole by highlighting the background of the study, problem statement, limitations and delimitations of the study. The chapter will also look at the research objectives and questions which will assist in the review of related literature and determine methodology of the study.

1.1 Background of the study

This research focuses on the problems faced by Beitbridge Town council in managing waste. According to Foo (1997) solid waste remains to be a major problem in rapid growing cities of the developing world. A rise in population, flourishing economy and a rise in living standards are among the factors which have accelerated the rate of waste production in developing countries (Minghua et al., 2009). The role of the municipalities around the world is to provide an efficient and effective system to the residents and solid waste management is the top priority. However, Sujauddin et al (2008) argues that municipals often face problems beyond measure due various reasons which include: poor organization, lack of resources both financial and physical amongst others.

In previous years, solid waste management has become a topic of interest among scholars in both developed and developing countries. An analysis of several books and journals from 2005 to 2016 revealed the same factors affecting solid waste management hence these were are two major scientific journals and more than 37 research studies related to factors affecting waste management. Amazingly, few scholars gave quantitative information in their studies According to Signdha (2003) urbanization and an increase in income has resulted in the production of high volumes of waste which therefore poses a great danger to the environment quality and human health. The right to hygiene and clean sufficient water is regarded as a key to health and wellbeing of the community

As cities develop, naturally the problem of solid waste management comes along with it. Therefore as a result, solid waste is not just escalating in composition but also changing in quantity from a few kilograms to tonnage percentage recently (Bartone, 1993). Technological innovations and economic booming has made several kinds of solid waste to turn out to be diverse and complex. This fact can be supported by the reoccurrences of cholera and malaria outbreaks caused by poor solid waste management.

Estimates revealed by UNEP (2010) show that in the year 2025 quantities of municipal waste produced around the world would have increased from 1.3 billion tons to 2.2 billion tons a year. Hoornweg et al (2012) states that increase in solid waste are influenced by the growth of population, good living standards and urbanization. Therefore the view that Solid waste collection in urban areas becomes a serious worldwide problem. This problem of poor solid waste management is currently affecting developing countries where waste collection is a major challenge to the urban authorities (Ogwueleka, 2009). Bowan and Tiebaar (2009) being supported by Ogwueleka (2009) state that throughout sub-Saharan Africa solid waste production surpasses collection. The amount of waste produced has outdone the rate at which the environment can decay it. This is tied together by poor waste collection in high density areas across the African continent.

In Zimbabwe solid waste is controlled by the Environment Management Act (Cap 20.27). Despite the law Zimbabwe as a country generates an average of 2.5 million tons of waste annually (Practical Action, 2007).). However, there was a report in 2007 by local authorities which stated that waste collection had reduced from 80% of total waste across various local authorities in the mid-1990s to as little as 30% of total waste in some big cities and small towns in 2006 (Practical Action (2007). Yedla (2005) states that a rise in solid

waste issues in cities has been caused and influenced by living conditions and a western culture to just throw away litter everywhere. Parikh and Parikh (1997) are of the view that environmental degradation and the loss of natural resources is caused by an increase in solid waste generation. Zurbrugg (2002) supports the above notion when he states poor waste disposal results in environmental problems which are hazardous to human health. Zurbrugg (2002) further states that environment degradation is triggered poor dumping of waste which is unmistakably through the pollution of surface water and ground water via leachate, air contamination and unrestrained discharge of methane by anaerobic decomposition of waste. Having seen that solid waste management is problematic in developing countries, Zimbabwe and its towns, it is important that people campaign for solid waste management systems that are sustainable. The main focus of this research is to look at the challenges that are being faced by local authorities in solid waste management. This study seeks to add to the body of knowledge on solid waste management as it tries to investigate on the challenges of Solid waste in Beitbridge.

1.2 Problem statement

Solid waste management has become the key element of public health and environmental worry in Zimbabwe and Beitbridge is no exception. The degree of the problems being faced due to improper solid waste management cannot be understated for example Open dumping and burning of municipal solid waste is a common phenomenon in most parts of Beitbridge. Due resource shortage, expensive bins, natural hazards, technological advancement and globalization, unethical practices in the public sector, economic instability, political intervention, poor stakeholder participation Beitbridge Town council has faced various challenges in managing waste. Poor solid waste management has resulted to environmental degradation and poor health of local people. This study explores the challenges faced by Beitbridge Town Council in managing solid waste.

1.3 Research Objectives

- To explore challenges faced by Beitbridge town council in addressing solid waste management.
- To determine the environmental and health impacts posed by ineffective solid waste management to the community.

- To assess the programs and policies adopted by Zimbabwe government to address challenges in solid waste management.
- To come up with recommendations and possible solutions that can help in addressing the challenges.

1.4 Research Questions

- What are the challenges being faced by local authorities in SWM?
- How are the challenges affecting the community?
- What has been done in trying to improve the state of service delivery?
- What strategies can be used to curb the challenges?

1.5 Justification of Study

This research explored the challenges of solid waste management focusing on the Beitbridge town council. The academic study regarding solid waste management has been widely researched focusing on larger cities like Harare by scholars (for example Tevera ,1991;DNR ,1994 ;Milgrud ,1995 ;Gandure ,1997 ;Mafusire ,1997;Jamare 1998 ; Kativu ,2001 ,Makwara and Magudu, 2013) hence there is lack of comparative research on small border towns like Beitbridge. This displays that the current research has not be extensive and is restricted on geographical coverage .As a result ,there is scarceness of material on Solid waste management affecting small towns especially border towns like Beitbridge.

Although there is about a period of a decade since the existing research on urban solid waste management have stretched, a small number of studies have struggled to tell the environmental complications that are related to poor solid waste disposal (Tevera ,1991 ,DNR ,1993 ,Mandimutsa,2000). Most past studies on SWM have looked on all fundamentals of SWM system from generation to disposal hence they have unsuccessfully failed to attain in-depth analysis of each of the efficient elements of the SWM system. One element ,which has patiently received less attention ,is waste disposal no wonder information about environment ,socio-economic and spatial impacts of solid waste disposal is limited in Zimbabwe. It is argued that in this study after wastes have been open dumped in the

environment, most environmental and health problems such as Cholera, HIV occur, hence dumping should be a top priority.

Lack of adequate information on environmental and health mishaps that is related to waste disposal makes it problematic for urban planners, health officials and also the government policy architects to establish effective methods and to make suitable policy recommendation that seek to reduce the environment contamination and protect public health as stated in environment management Act (chapter 20:27).

Beitbridge town was selected among other small towns in Zimbabwe for this research because its population has been increasing after every decade especially after the year 2000 when economic problems started to face the country. Also the town was selected because it has one of the lowest rates of collection in Zimbabwe which resulted in more than 3000 people dying of the cholera outbreak which hit the country in the year 2008. Furthermore the town was selected because illegal waste dumping is common and the town is near rural areas hence numerous protected domestic animals scavenge at waste dumps around.

1.6 Delimitation of the Study

The study area is divided in physical and conceptual boundary.

(i) Physical

The research shall be carried out in Beitbridge Town. The town is in Matabeleland province. According to the 2012 census, the city has a population of 42,137 people that is, 20,432 males and females 21,705 (ZIMSTAT, 2012). The town has 10 wards but the research shall be carried out in 4 wards which shall be picked at random.

(ii) Conceptual

The main thrust of the study is on the proper management of solid waste. It looks at how an ideal town can be established in the face of an increase of solid waste.

1.7 Limitations of Study

The researcher will only focus on one local authority which is Beitbridge, because here in Zimbabwe there are quit many local authorities which are facing the same challenge as Beitbridge. Given the current socio economic problem in Zimbabwe the researcher will use limited resources to obtain information and fully develop this study. Furthermore some council documents are confidential hence the researcher won't have full information on how

the issue of waste management is being done at Beitbridge town council which will lead the researcher to be depended on other sources.

1.8 Definitions

***Waste** - are unused stuff or possessions or leftovers that have lost their value to the person who used it first (Matowu and Tevera, 2002).

***Solid waste** – is any waste that is hard or solid and not liquid –for example broken bottles, cardboard boxes plastic bags just a few to mention.

*** Household waste** – it is solid waste that is composed of junk and litter generated by households or at homes.

***Waste generation** - All activities in which materials are identified as no longer of any value and so are thrown away or gathered together for clearance. This is the stage at which the resources become valueless to the owner and since they have no use for them and want them no longer (Masocha and Tevera, 2003).

***Solid waste disposal** - removal of generally solid or semi-solid materials, resulting from human and animal activities, that is useless, unwanted or hazardous.

***Transfer** - The act of relocating wastes from the collection vehicles to larger transport vehicles.

***Waste collection** - Is the act of picking up wastes at homes. It encompasses the gathering of solid waste and recyclable materials as well as the transporting of these materials to their destination.

***Challenge** – a major problem or difficulty this could be economic, social, physical or environmental that hinders the successful performance of a policy or planned activity (Baryman, 2006).

1.9 Summary

This chapter has provided knowledge and detail on the topic under study. It also states the difficulties that were found in achieving this research. The main aim was to bring out the background, limitations, delimitations, objectives which would assist the researcher and the readers to have the direction of this study. This chapter has outlined research questions as a guideline to the study and the statement of the problem. The following chapter which is chapter two will focus on the literature review.

CHAPTER II

LITERATURE REVIEW

2.0 Introduction

The core objective of this chapter is to illustrate what the available literature from a variety of schools of thoughts and scholars highlights on solid waste management. Cooper (2008) avers that literature review is a method of attaining information from a variety of authors which is in line with your study. Of note is that, when examining other studies, the researcher must use valid and relevant information (Schaefer, 2006). This chapter is therefore, going to explore what other scholars say pertaining to the challenges of solid waste management. Essential to note also is that, this thesis argues that solid waste management has been widely researched in regard of larger cities like Harare leaving out smaller towns like the Beitbridge Border Post and Plumtree Boarder Post amongst others. Journals and study books are therefore, going to be examined vehemently in this chapter to realize solutions for small towns and to cover the literature gap. It is therefore, imperative at this juncture to look at literature review in detail.

2.1 Solid Waste

Solid waste has been widely defined by a variety of scholars around the globe who are interested in solid waste management issues. Amongst the scholars is Kemal (2007) who states that solid waste can be defined as garbage discarded from mining, industrial, commercial operations including the community activities. It can be differentiated from sewerage a term used to refer liquid waste (Mader 2011). Tchobanoglou et al (1993) supports the above notion when he defines solid waste as refuse from animals and community activities which is usually regarded as unwanted.

Solid waste includes materials which are dangerous and not dangerous both commercial, household trash and construction waste (Zerbock 2003). GIM (2009) argues that solid waste comes from water waste discharges, atmospheric gas emissions, which come from industrial, domestic and institutional activities in urban areas. From the above definitions the researcher has come up with her own definition whereby she defines solid waste as unwanted or useless material thrown away from various human activities which are both a health and environmental hazard.

However, for the purpose of this research will defined as waste materials emanating from human activities. This study will focus on the challenges of Solid waste management in one of the busiest border towns in Africa, Beitbridge.

2.3 Categories and Main Types of Solid Wastes

Solid waste can be distinguished into various types depending on its source. Three major categories of solid waste are municipal waste, industrial and biomedical waste. Prakriti (2006) defines municipal waste as household waste which includes sanitation residue and waste from the community. This waste generally comes from residential and commercial complexes .Due to people moving from rural areas to urban areas, overpopulation has resulted in the amount of solid waste rapidly increasing.

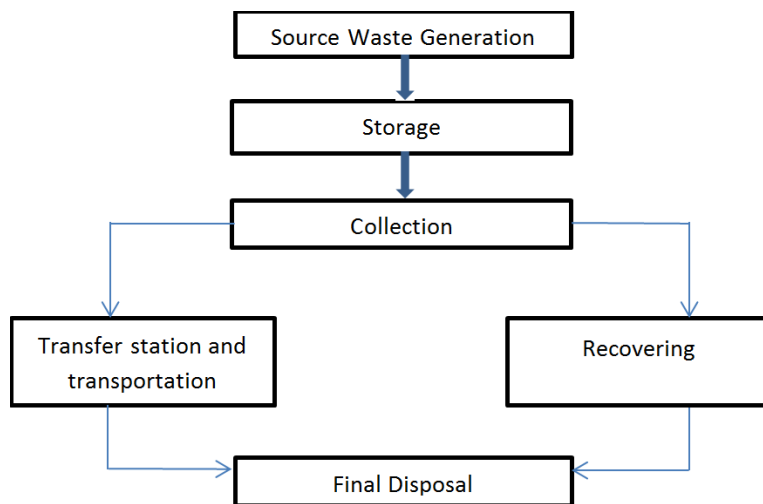
Hazardous wastes could be very dangerous to humans, plants and animals, hence they are acidic, inflammable or explosive for example gases (Prakriti, 2006). Various classifications of household waste cannot be excluded from being dangerous for example perfume bottles ,shoe polish and paint tins. Hospital and industrial waste can also be considered as very dangerous as sometimes contain poisonous and deadly substances. Poisonous waste in industries mainly comes from chemical, metal, paper, dye, pesticide, rubber and refining industries.

Hospital waste usually is produced during the diagnosis of a particular disease or virus, treatment or immunization of people or animals in research activities or in the generation or testing of biological (Prakriti, 2006). These types of waste may include anatomical waste, disposables and chemical wastes hence these can be bandages, used injections, body fluids etc. Hospital waste is extremely contagious and can be a serious to human life if mismanaged by the health personnel's.

The categorization of waste is very vital since it enables those in the treatment and management of waste to ensure both human and environmental safety work hand in glove with the environmental regulations. As researcher classifying waste enables to manage various diseases that can impact negatively to the human life.

2.4 Processes of Solid Waste Management

Process of solid waste includes the following generation, collection, transportation and disposal. A proper waste management should follow this kind of systems as stated below:



Source: Field Research (2017)

A Diagram that shows a process of solid waste management.

The diagram above expresses how solid wastes are treated from the beginning of solid production to the end when solid wastes are disposed.

2.5 Sources of Waste Generation

Waste production involves all the materials that are thrown away because they have lost value (Momoh 2010). UNEP (2009) statistics state that since the year 2003 to 2006 almost 2.2 billion of waste was generated. The UNEP also states that the production of waste increased in 2007 and 2011 by 37.3%. For these huge productions of waste, collection and management are vital (UNEP, 2009).

2.6 Storage

Zhu et al (2008) reveals that this is a site where waste is deposited before it is collected to the dump site. Storage is the first stage before for collection and management. In most communities solid waste storage is a responsibility of each family. Galvanized steel bins, plastic bins, plastic bags are usually used. The containers are more than 70-140 litres in size. Landlords are responsible for placing the bins under control. In flats the owners usually are the ones who deliver to the dumpsites (Chaudhary Singh and Gupta, 2014).

2.7 Collection and Transportation

Chaudhary Singh and Gupta (2014) state that the collection and transportation process includes garbage put at pick up points mainly outside houses, which is then carried by trucks to the disposal site. They argue that collection is challenging and costly. The time timetable for waste collection in most communities is usually once or twice in seven days. In most residential areas, bins are kept at the back of the houses and in other cases resident use plastic bags which they carry to the collection point thereafter vehicles come to collect. In other communities the collection crews clear the galvanized bins and returns them.

2.8 Recovery and Recycling

According to Chaudhary Singh and Gupta (2014) other materials of solid waste can be used as secondary resources. Amongst these are plastics, bottles, paper, aluminum, metal etc. These materials can be detached from solid waste before they can be reprocessed. These materials must be separated from MSW before they can be recycled.

2.9 Disposal

The transported waste from collection is all transported to disposal sites. According to Robert (2012) waste from transfer station is usually transported 30km away from the towns and the city. In developing countries most of the solid waste which is deposited ends up in the ocean affecting those who live in coastal areas.

2.10 Solid Waste Management in Developed Countries

In developed countries like the United States America waste was usually dumped into the Atlantic Ocean using a wooden scow (Mayank, 2013). According to Mayank (2013) this happened in the 19th century in New York hence the introduction of Solid Waste Management. The reason for Waste management was to save the Atlantic Ocean, which was becoming dirty day by day due to the industrial revolution. A rise in production led to a solid rise in waste production leaving the peoples health in danger if they did not manage waste.

According to the Environics Internation Group (2002) Canada produces about 29 million tons of solid waste .Statistics state that 21 million of the waste is either burnt or destroyed. The remaining 9 million is industrial waste. Private companies are given tender to recycle

bottle, used oil, and used tyres. Technological waste such as computers, hard drives and printers are deposited in landfills Environics Internation Group (2002).

In Australia during 1996 and 1997, 21 million tons of waste was deposited in landfills nationwide and this is according Newton and CSIRO (2001). Land filling is the main method used for solid waste management in Australia and their total population is 20 million, making the country one of the biggest producers of solid waste.

According to Wright (2000) Japan produces about 51 million tons of domestic waste per annul hence the country prefers incineration as the major way to manage waste. Japan has a law on waste management which encourages reduction, reuse and recycling. As a country they have introduced laws and policies which have zero tolerance on the mismanagement of waste. The other way to reduce waste in Japan is through the sale of second hand things to other countries Wright (2000).

From the above countries, it can be noted that solid waste management has become a major problem since more waste is being produced on a day to day bases .It can also be noted that developed countries are the highest producers of solid waste even though they claim they can manage it through recycling.

2.11 Solid Waste Management in Developing Countries

A rise in people moving from rural to urban areas, a growing economy and a rapid increase in the living conditions has catalyzed the management solid wasted generation by town councils in most developing countries (Mighuaet al., 2009). Those in control ,usually town councils which focus on the management of waste have hardships in trying to provide efficient and effective systems to the community due to lack of organization as well as financial resources. Solid waste management is a big problem for most municipal authorities in developing countries mainly due to the rise of waste, the failure of the town councils to budget wisely resulting in the high cost associated with its management, the lack of knowledge over a variety of factors that have an impact on the different stages of waste management and linkages necessary important to ensure the whole handling system is functioning (Guerrero et al., 2013).

An amount of US\$46 billion is spent by developing countries in trying to control or manage their municipal solid waste and reports say these investments could triple to \$150 million by 2025. Lefilleur (2012), states that municipal authorities in third world countries are finding it

challenging to raise the necessary revenue to meet these costs. They are regularly used to focus on the urgent needs, which is collection to the detriment of processing resulting in incurring high costs hence achieving poor performances. Ali (2005) states that the Millennium Development goals aims at producing access to environmental sanitation and sustainability, but safe disposal of waste seems to be more than a dream and seems to go beyond the capacity of many countries.

Most scholars have revealed that the stake holders are an interested part in solid waste management. Stakeholders that may have an interest include local and national government, non-governmental organizations, ministry of health, recycling companies and private contractors (Geng et al., 2009). Recent studies have gone further to identify the factors influencing the components of the waste management systems.

Sujauddin et al. (2008) propounds the generation of waste in a community can be influenced by family, salary or monthly income and the level of education. Furthermore Zhuang (2008) reveals that problems which go in hand with waste separation are mainly affected by factors which include: the active investment and support of a real estate company, residence committee which looks at public participation and a fee based on the volume and weight of waste (Scheinberg, 2011). Ereke (2009) states that waste utilization and separation behavior can be explained by gender, land size, peer influence and location of household.

It has been stated the major problems which face municipalities in collecting and transporting waste are caused by improper planning of bin collection, the lack of a suitable timetable to collect waste, poor road networks and the lack of vehicles and suitable infrastructure (Hazra and Goel, 2009; Moghadam, 2009). Sharholly (2008) reveals two major ways of extending affordable waste collection services hence these are promoting micro-enterprises and the informal sector. Chung Lo (2008) reveals that the shortage of treatment systems and technology by the local municipalities can be a major factor affecting the management of waste.

Tadesse et al. (2008) explains and analyses ways that influence the decision of household waste disposal. He found out that the supply of waste facilities has an impact in the choices of waste disposal. Insufficient supply of bins and the long distance to the waste collection containers resulted in people dumping their rubbish on the road side and open spaces. Solid waste management in third world countries commonly face various challenges that include irregular and inconsistent collection services, low collection coverage, open dumping which results in resident burning trash without water and air pollution control (Manyanhaire et al.,

2009:129; Masocha and Tevera, 2003; Zurbrügg, 2002). Issues to do with solid waste management in most African countries can be grouped into financial, technical, and institutional and social constraints (Ogawa, 2005).

Pokhrel and Viraraghavan (2005) propounds that the lack of proper policies and laws, financial resources are amongst the factors which limit the safe disposal of waste. Ogawa (2005) reveals that the problem of solid waste in most developing is caused by the lack of technical skills. He adds that the lack of proper education by the authorities has limited the technical expertise and little engineering and training for effective waste management. This view is supported by the UNEP (2004) where they state the lack of technical and human capacity within the government have resulted in the challenges of waste management in developing countries.

In addition to the problems added above Puopiel (2008) who researched about solid waste management in Ghana reveals that that people who stay in mountainous regions tend to face challenges of managing waste because of the geographical location. He states that issues of solid waste management are rampant on the up hills rather than lower valleys. Jain (1994) states that the lack of stiff penalties and laws fail to control waste generated by tourists.

Another research in Nigeria by Momoh and Oladebeye (2010) reveals that rapid urbanization especially in third world countries which are attached with technological innovations, waste disposal and waste management are a tip of the iceberg in causing serious waste problems in communities. They state that most of the cities in Nigeria face serious waste management issues due to the lack of a legal framework by the municipals to deal with multinational companies who extract oil .These multinational companies are profit oriented and they don't care about the management of resulting in environmental and health problems.

From the above views, Stockholm (2013) reveals that the management solid waste in Africa is a result of both the citizens and the municipal agencies. He again notes also blames the stakeholders saying they should be involved in the aware campaigns to inform and educate citizens on the dangers of poor solid waste management. Although studies have been researched in developing countries, however, most of the studies are confined to the much larger and older cities, and thus seemed that the awareness about the situation in the smaller but new cities, which may even be experiencing faster urbanization, are being neglected.

2.12 Waste Management in Zimbabwe

In Zimbabwe Solid waste management has become a major problem in both rural and urban councils. The rapid movement of people from urban areas in the last decade looking for greener pastures in the cities has resulted in local authorities in failing to provide enough services to the citizens (Training and Research Support Centre, Civic Forum on Housing, 2010). In the year 2009 the poor management led to a various problems which resulted from waste dumping and it is estimated that more than 2 million tonnes of household and industrial waste are produced in the urban areas of Zimbabwe. It is also stated that in 2007 waste collection due to the economic situations, waste collection dropped by 80% of the total waste across different local authorities compared to the 1990s where it was low as 30% in large and small towns (Practical Action 2007).

The issue of solid waste management has become a main topic of discussion between the residents, government and city councils (Gukurume, 2011). City councils are unable to have a proper time table to collect and manage refuse and Beitbridge Town Council cannot be exempted. A solution to waste management in most developing countries such as collection and final disposal can be solved by recycling hence creating employment for the locals (Gukurume, 2011).

Chingwenya (2010) shares the same sentiments with Gukurume when he states that waste collection mostly in urban areas can go for weeks and months without collection. All this results in residents illegally dumping rubbish in open spaces since they would no longer be able to contain the waste in their yards (Musadamba et al, 2011). In the wake of the councils failing to collect refuse an estimated 7% improvise by looking for private collectors. The effort to opt for private collector's results in the pollution of the environment since most of the waste is disposed in the nearby bushes and bridges (Zvikaramba, 2008). These private collectors are usually individuals from the community who earn a living by disposing waste, hence they charge a certain fee. They do not transport to the garbage site, but rather they throw it in bridge hence creating more unwanted illegal dumps.

Makwara and Mugudu (2013) argue that the management of solid waste in Zimbabwe is literally on the verge of collapse. The situation has been accelerated by political and economic problems which have been affecting the country since the year 1999 and 2009, where corruption was rampant within the city councils contributing to the mushrooming of illegal waste dumps in most urban areas (Mangizvo, 2010; Mubaiwa, 2007).

Chikobvu and Makati (2011) reveal that the poor collection of refuse by the City Fathers has encouraged people to practice the burning of waste in their homes and open spaces. “Open space burning” is defined by the New Hampshire Department of Environmental Services (2013) the burning of any material which causes air pollution. New Hampshire Department reveals that open burning is mostly practiced in the rural parts of the USA where local waste is hardly collected due to the lack of collection services. Lemieux et al (2004) reveals that open burning is regarded as a solution to waste management in most of the developing countries. This method of open burning has become the major solution to waste management across the country. Park (2013) reveal that open burning has become a behavioral issue where plastics, papers, agricultural residues amongst other waste are a topic of interest amongst environmentalist and other researchers since it causes serious environmental impacts.

Mangunduet al. (2013) takes a flashback to the attainment of independence by Zimbabwe on the 18th of April 1980. He states the new government in power eased policies which prevented urbanization of the black populace from the rural to urban areas. This is said to have resulted in a huge number of people moving to the city and most of them settling in the high density suburbs, which were characterized by illegal dumping due to erratic waste collection methods (Kaseke2005; Chidavaenzi2006; Tsiko and Togarepi 2012). In Kasekes (2005) accession population growth in the large cities and small towns of Zimbabwe has resulted in the rise of non-bio degradable plastics and bottles. In Zimbabwe, the Ministry of Local Government, Rural and Urban Development (1995) revealed that poor solid waste management has been a result of the lack of refuse by collection vehicles. In 1991, the Harare city council failed to collect refuse because out of 90 vehicles only 7 worked and this case it was caused by the lack of funds to train people on how to use and maintain the vehicles (UNCHS 2001).

In order to reduce waste in urban areas the government of Zimbabwe introduced “Operation Murambatsvina “ also called Operation restore Order, which was aimed at dealing with the increase of waste in urban areas .This resulted in the birth and adaptation of the Environmental Management Act. The Environmental Management Act [Chapter 20:27] is a law which was formed in 2003 so as create a safe and protect the environment (Mangizvo, 2007). It also ensures the prevention of pollution and environment degradation .However, despite the introduction of this law, residents have become resistant as they continue to discard litter outside their houses.

2.13 Challenges of Solid Waste Management and its Impact on Health and the Environment in Zimbabwe

According to Hardboy (2001) poor solid waste management by most town councils in developing countries like Zimbabwe has become a danger to the urban environments. He states that the major problem of dealing with solid waste management in developing countries is the lack strict laws or penalties. Chenje (2002) contends that in Zimbabwe there are numerous laws which deal with solid waste, but the major problem is the application of these laws. Tevera (2002) argues that the disintegration of government organizations which deal with administering laws on solid waste management do not encourage a sound environmental management. The mismanagement of communal bins by the municipals results in the litter over spilling on road side and causing a nuisance (Huvengwa, 2012).

Bandara and Hettiarachchi (2003) state that poor solid waste disposal in developing countries cause's citizens to practice open dumping thereby threatening the environment. Environmental problems linked to solid waste include: air pollution from landfill secretions and ground water pollution from leachates as well as the decreasing beauty and value of an area.

Landfill gas secretions and leachate produced into the surroundings result in sever pollution problems. Manyanhire (2009) states that leachate produced into the ground pollutes both the surface and the ground water sources. Methane produced into the air through the decomposition of waste materials in open dumps contributes a percentage to greenhouse gases. Bandara (2013) reveals that 8% of greenhouses gases are caused by land cliffs emissions. Hoornweget (2013) states that greenhouse gases are becoming a major concern on managing waste. Environmental problems that can be associated with degradation of waste materials are odors or bad smell.

According to Masundire and Saunyanga (1999) open dumping is a major cause of various health problems like malaria and cholera. Open dumping creates a good environment for mosquitoes and flies to breed(Masocha,2001). Prikford (1983) propounds that mosquitoes and houseflies fly a distance of 5 kilometers from the dump site to the houses. This can result in the in diseases like cholera and malaria affecting those who stay close to the waste dumps.

Mader (2011) supports the same motion when he states that poorly managed dump sites affects human health. Poorly managed hospital waste can result in the transmission of incurable diseases like HIV and AIDS (Ramokate and Basu, 2009). According to Taru and

Kuvarega (2005) other solid wastes may cause transmittable diseases like typhoid, dysentery whilst air pollution may cause lung diseases like tuberculosis. If solid waste is poorly collected or improperly stored it encourages the breeding and reproduction of flies, rats and cockroaches hence are vectors of diseases (Tchobanoglous, et al , 1993).

Scholars like Boadi and Kuitunen, 2005; Korfmacher, 1997 state that in developing countries flies and misquotes reproduce fast because of the warm weather condition which are conducive to breeding leading to a negative health consequence from improperly managed waste .Galishoff (1998) supports the above scholars when he states that solid waste block water drainages as a result creating a conducive environment for mosquitoes and other insects to breed. If waste is uncollected air, water pollution might occur (Mader, 2011).

The movement of people from rural to urban areas increases the consumption levels and the rise in the generation of toxic materials that lead to the depletion of natural resources whilst it also leaves the environment in a bad state (Maseva, 2005).

Waste also diminishes the value and beauty of a place, thereby reducing its attractiveness. Unattractiveness has a negative impact on the tourism sector which is heavily dependent on nature for its success.

2.15 Waste collection, transfer and disposal in Zimbabwe

According to Johnson (1991) only a limited number of cities in developing countries have proper waste and disposal systems. Statistics reveal that between 30% and 50% of uncollected solid waste is produced in urban areas (Hardoyet1993).Zimbabwe is one of the countries which face problems in waste collection, transfer and delivery. Due to the lack of a proper time table for waste collection in Zimbabwe most of the residents tend to prefer open dumping resulting in the increase of waste along roadsides.

Burning of waste has become a habit, most cities and towns, Beitbridge not being excluded because responsible authorities are failing to carry out their chores. Harare the big city in the country was once labeled as the “Sunshine city “due to its cleanliness has lost its gleam due to excessive waste heaps lying around the city.

Mangizvo (2007) argues, cities in Zimbabwe produces about 60% of solid waste which is transported to dumpsites. Most of the waste collected is not transported to dumb sites but it is illegally dumped in undesignated areas such as alleys and road verges (Masocha and Tevera,

2003). Such practices have been rampant in most growth points around the country as mentioned by Masocha and Tevera.

Waste disposal is defined by Miller (1996) as the throwing away of unwanted material through various ways such as incineration, land filling on dumpsites and composting amongst others. Crude dumping is used as the disposal waste system in most developing countries (Mangizvo, 2008). As stated above by Masocha (2002) 60 % of solid waste produced in urban areas are dumped at crude also known as open disposal sites that do not meet environmental standards. Chidavaenzi (2006) also comprehends that almost half of the waste produced do not meet disposal sites.

2.16 Major Factors that are Causing Local Authorities to Provide Poor Quality of Service Delivery

Resource shortage

In Zimbabwe most local authorities are complaining that they are facing financial resources challenges as the economy is yet to recover from the economic meltdown experienced in the last decade. Chowdhury (2013) propounds that, “the turndown of 2008-2009 has extremely affected the world of work and hence the source of revenue and employment prospects of millions of people”. Many local authorities are having a challenge due to financial resources and as a result of poor budget performance as their organizational objectives do not match with the budget therefore leading to mismanagement of resources. Due to financial hardships local authorities are finding it difficult for them to purchase machinery need for refuse collection, therefore Blight and Mbande (1996, 236) as stated in Mudzengerere and Chigwenya (2012) point out shortage of tools and use of timeworn and unsuitable machinery which is unproductive in waste management in developing countries. As such local authorities have failed to manage solid waste due to financial issues as there is huge expenditure needed to provide for the service. At times the challenge is further worsen by the absence of financial support, limited resources and the unwillingness of the users to pay for the service.

Absence of proper landfills/dumping grounds

Another challenge affecting local authorities in solid waste management is that of not having proper landfills to dispose of their solid waste. A landfill is an area that is prepared specifically for the disposal of solid waste and then the solid waste is buried. According

Dewa et al (2014) states that Norton Town Council does not have landfills to dispose of solid waste and as such solid waste is seen dumped almost anywhere where there are no houses. Recently Harare City Council highlighted that its landfill site had been exhausted such that the management of solid waste had been a challenge. The problem has been exacerbated by the need for housing stands leaving places for proposed landfills nil. This is a serious problem as it has health related issues such as the spread of diseases like cholera. It was noted that Beitbridge Municipal Council is lacking the capacity to execute its mandate efficiently, which undermines the goal of environmental protection. Solid waste is not sorted or graded. Due to irregular collection of solid waste, illegal dumpsites are a common sight in this town. It was also learnt that various types of solid waste reach Dulibadzimu dumpsite but this has remained uncovered for a long period of time and this is negatively affecting the surrounding areas.

Technological advancement

According to Guerrero et al (2013) waste management is also affected by the aspects or enabling factors that facilitate the performance of the waste management systems. These factors also include technical skills availability. This has resulted in the adoption of Information Communication Technologies (ICTs) to help improve efficiency by reducing the time and distance between local authorities and their various stakeholders. Thus technical factors in most local authorities in developing countries related to lack of technical skills among personnel within municipalities and government authorities, have contributed to the challenges in solid waste management (Hazra and Goel,2009). Literature points to different mechanisms which can be employed in the management of solid waste. Technology has also advanced in terms of machinery used in service provision by local authorities. In terms of health, road construction vehicles, fire and refuse trucks. The garbage collecting trucks need to be of more advanced technology so as to keep up with the changes in population size as well as the amount of waste being produced. Old and outdated machinery are still being used in most local authorities no doubt leading to poor refuse collection due to mostly poorly serviced vehicles for instance Beitbridge town has got only one advanced truck for garbage collection therefore it does not manage whole of the town since it sometimes need to be serviced henceforth it becomes a challenge. However the technical skills seem to be absent in most local authorities in Zimbabwe. Coupled with the absence of financial resources the absence of technical skills means the management of solid waste will be a challenge for a while.

Poor town planning

Apart from the absence of technical skills where qualified personnel are in existence they are characterized by poor town planning systems. Most local authorities in Zimbabwe do not have enough land to properly designate as dump sites to dispose of solid waste. However most towns notably Norton Town Council do not have plans in place where provisions have been given for dump sites as evidenced by garbage which is dumped almost anywhere in the towns west side outskirts.

Guerrero et al (2013) notes that in most cases, management deficiencies are often observed in these municipalities. Thus as such the poor town planning is the result of management deficiencies. Some researchers that have investigated the institutional factors that affect the system have come to the conclusion that local waste management authorities have a lack of organizational capacities (leadership) and professional knowledge. There is need for town planners to furnish themselves with proper town planning systems and then apply them accordingly as this will assist in averting the challenges of solid waste management.

Human activities

It is generally regarded that waste management is the sole duty and responsibility of local authorities, and that the public is not expected to contribute (Vidanaarachchi et al., 2006). Urbanization was defined by Morrish (1983: 128) as the process whereby the percentage of the population living in cities increases. Urbanization can be referred to as the rapid growth and expansion of urban population due to a number of factors like migration and natural increase. This is generally the culture within communities in Zimbabwe. People in Zimbabwe have developed a culture of dumping solid waste anywhere they see fit. This has led to an upsurge in the amount of solid waste that local authorities have to contend with. The city of Harare used to be termed the “Sunshine City” because of its cleanliness. However, over the decade the state of cleanliness has deteriorated drastically mainly due to members of the public who throw paper and other waste material just about anywhere. In addition it must be noted the operational efficiency of solid waste management depends upon the active participation of both the municipal agency and the citizens, therefore, socio cultural aspects mentioned by some scholars include people participating in decision making (Sharholy et al., 2008), community awareness and societal apathy for contributing in solutions (Moghadam et al., 2009). Furthermore there is need for the local authority to apply consistent stiffer penalties for defaulters. Beitbridge as a border post suffers most from pollution due to the

high migration levels in the town; travelers pollute the town and this pose a great challenge of keeping the town clean for the town council.

2.17 Legislative Framework

The legislative framework for managing waste is in place in the form of the Environmental Management Agency which is regulatory authority set up in terms of section 9 of the Environmental Management Act chapter 20:27 of (2003). The purpose of existence was the preparation of the environmental plans for the management and protection of the environment.

Environmental Management Agency regulates and monitors the discharge or emission of any pollutant or hazardous substance into the environment. If anyone is caught polluting the environment he/she will be accountable for the act and is liable to pay a fine. In support of this section 69 of the Environmental Management Act (2002) states that no person or group of individual is allowed to dispose waste that will pollute the environment or affect the health of people. It goes on to section 36 where it states that every user would take necessary measures to reduce waste through waste minimization, reuse was noted. The agency assists the local authorities and participates in any matters pertaining to the management of the environment and in particular to regulate and monitor the collection, disposal, treatment and recycling of waste.

Section 83 of the Environmental Management Act stipulates that illegal dumping in roads, water, streets, land or any place is not allowed, but to dispose in proper places eg designated site, containers that are provided for that intended purpose. In addition to the section it further states that all people or local authorities responsible for a certain area or premise must provide receptacles or designated sites for waste storage (government of Zimbabwe 2007). When analyzing this law it clearly in line with the deteriorating situation of waste it is not clear on who is responsible for the provision of receptacles as it give the responsibility to the local authorities and customers.

Section 14 of statutory instrument 6 states that every council shall designate suitable sites as waste disposal sites and waste shall be collected at a collection frequency that do not favor decomposition of waste (Mangizvo, 2010a)

Public Health Act of (1996)

According to section 83 of the Public Health Act of Zimbabwe (1996) it propounds that it shall be the task of every council to take the responsibility and reasonably practical measures for maintaining its districts, in a clean and sanitary condition by preventing the accumulation of waste which may be injurious or dangerous to health (government of Zimbabwe, 1996). This act is in line with the Environmental Management Act of 2002, although it does not outline the information of how the councils are supposed to achieve a health and clean environment.

2.18 Local Authority by Laws on Waste Management

Local authorities create bylaws that help regulate the activities taking place in their area despite policies and laws of parliament which deal with waste management. According to Chakaipa (2010) local government in Zimbabwe is administered by the Acts of Parliament, and has been preserved in the constitution and its operations guided by acts of parliament. Acts of parliament are prone to amendments, these changes affect planning and decision making in local authorities. Local authorities are given powers to control their areas of the Urban Act chapter 29:15 which mandates that each local is required to have by laws guiding the manner in which certain activities are performed towards the management of waste. Statutory instrument (477 of 1979) which was used before independence states that by laws apply to:-

- The area controlled by the council
 - -only the council or contractors have the right to remove domestic unwanted waste from the premises
 - No person is allowed to dump waste in any land or public spaces
 - No person is also allowed to deposit waste on the ground leaving it dirty and filthy.
- Even though, The Urban councils regulate most of these activities little has been done in introducing key sustainable waste practices such as reuse, reduce or recycle material. Moreover the law does not mention what happens to the waste collected and what to be done if the council fails to meet its obligations. The Act is again silent on the requirements for establishing a disposal waste site. By-law of Gweru city of 1982 governs the collection and disposal of wastes in the city. However, urban local authority does not have management regulation to support the minimum, recycling and involving stakeholder in managing waste.

2.19 Empirical Evidence

2.19.1 Tanzania

Solid waste has been a big problem in municipal centers in Tanzania including Dar-es-Salaam (State of the Environment Report 2008, Tanzania). The challenges of solid waste management began to worsen in the mid 1980s' when generally social services delivery started to deteriorate (Jones and Mkoma, 2013) they noted that several reasons have been given for the continued deterioration of the waste management situation in the Dar-es-Salaam city among them being the extreme rapid growth of the city population resulting from up country immigration.

The study also revealed that, the seriousness of the solid waste management situation in Dar-es-Salaam has continued to worsen in spite of the Government efforts to try to solve it through administrative reforms. The Government reforms by liberalizing the functions of waste collection to private campaigns. However due to the reforms it is estimated that solid waste collection increased from less than 5% to 40% in 2000, (Palfreman, 2011 as referred to from Dar-es-Salaam City Council).

Maziku (2014) in his study also noted that the local authority is having a challenge due to poor planning of the city, unplanned settlements which have grown as squatter areas, shortage of facilities such as vehicles, waste containers, reluctant of the community members to pay waste management fees, lack of waste bins in the city, lack of community awareness on environmental management and also lack of law enforcement.

2.19.2 Australia

A study by Brackertz (2013) availed that the Australian local governments face impediments like financial constraints, inter-governmental dependencies and the transforming roles and responsibilities of local government, ideas about local government as a grassroots democracy and responsive governance versus prospects that it be an efficient vehicle for the delivery of many important services and act as an executor of State government policies and programs, limitations on sovereignty due to lack of constitutional recognition.

The study revealed that the increase in local government functions devolved from central government were ill-matched by an increase in funding or appropriate access to additional revenue. It has to be noted that in order for local authorities to be effective and efficient in the

delivery of services the central government has to release funds that equal the roles and responsibilities that are decentralized to local authorities.

2.20 Gaps in Literature

Not much literature is available for solid waste management practices at border towns globally, let alone in Zimbabwe. Most researches that have been conducted in Zimbabwe concentrated on waste management issues in the major urban centers of the country, for example Harare, Gweru, Mutare and Bulawayo. Not much is known and very little has been documented on the solid waste management practices at border towns even at a global scale. This research project aims at shedding light on the solid waste management practices at a border town so as to bring small border towns at spotlight. Much reference will be given to solid waste management practices in urban areas so as to allow conclusion to be drawn at a border town.

2.21 Summary

In summation of the chapter, essential to note is that a variety of schools of thoughts have a variety of views in regard to solid waste management. Challenges to waste management according to these schools of thoughts include lack of waste dumping ground, poor town planning, human activities to mention just a few. The empirical literature review focused on Tanzania and Australia, thus, literally one developed country and a developing country. The next chapter is therefore, going to look at the research methodology. Thus, basically looking at the data collection methods, research tools employed to mention just a few.

CHAPTER III

RESEARCH METHODOLOGY

3.0 Introduction

This chapter gives a framework of the research methodology used in collecting data which is relevant to the challenges being faced by local authorities in managing solid waste. A well informed and a detailed assessment of the research design, target population, sampling techniques, sample size, data collection instruments, data presentation and analysis will be brought out in the discussion.

3.1 Research Methodology

Research methodology is the methodical analysis of principles associated with a variety of knowledge. Rose (2005) avails that; this type of analysis involves either qualitative or quantitative techniques or uses both methods. This research makes use qualitative techniques which is defined by Bryman (2004) as a way of deducing information by analyzing, presenting and debating on the findings of the study. According to Lincoln and Guba as quoted by Savenye and Robinson (2003) qualitative research is a logical method with a set of beliefs that provide knowledge of why and how the world is.

Qualitative research seeks to enlighten and explain reasons behind a certain action by people or statements they speak. In this research it tries to unpack a full picture behind The Challenges of solid waste management by the Beitbridge Town Council. According to Stake (2011) qualitative research is dependent mostly on human observations and understanding. Qualitative is superbly capable of attaining culturally specific data with reference to opinions, behaviors and social contexts of a certain community (Mark 2005). This paradigm is appropriate for this particular investigation because it reveals the mechanisms or techniques used by BTC in managing waste.

According to Halfpenny (1979) the benefit of using qualitative research is that it is independent, speculative, and political and flexible. However the disadvantage of using this type of research is that it is floppy since it is unable to clarify phenomenon.

3.3 Target Population

The target area of this research was Beitbridge Town council and residential areas. The target population of this research consists of the residents and Beitbridge Town Council staff members. Beitbridge Town Council staff members were key targets because they had key information on the practices of solid waste management around the town and they are also service providers who ensure cleanness around the Border Town. The researcher also targeted an EMA officer a parastatal under The Ministry of Environment and Natural Resources as a key informant as he had much information on the particular study being carried. BTC has over 300 employees, where 137 are permanent and the rest are contract workers. The researcher is going to sample a total of 20 employees, 5 from each department as there are four sectors in the town council and 10 members of the public.

According to Bryman (2004) a sample is a subgroup of a targeted population that represents the whole cluster. Denzin (2002) further defines a sample as the picking out of a group or an organization under study. Therefore, sampling is a technique by which units are picked out of a targeted population to pull a wider deduction on it. O'Leary (2016) reveals that data is taken from the few so as to gain information and thoughts of a larger population. Sampling helps the researcher to get immediate results in a short period of time as the views and feelings of the whole population are represented by a small group. This study makes use of various sampling methods to make sure that the information gathered will be from the members who are a representative of the population under study. In this research, the sample was carried out from different members and departments of the Beitbridge Municipal which include: finance, engineering, administration, housing and health.

3.4 Sample Size

Information was gathered through structured interview and the sample size was 30. In this research 10 members were chosen from the public and 5 members were chosen from each of the four departments which were mentioned above hence this include Engineering, Health, House and Administration. Questionnaires were issued to staff members and the residents and interviews were also administered to the senior members of the municipality.

3.5 Sample Procedure

First of all, the researcher wrote down the six names of Beitbridge wards into small pieces and three wards were purposefully selected for this study. These names included: Mashavarire ,Mashakada ,Baobab ,Medium Density,Dulibadzimu and Shuleleshule hence some of these areas are trading areas and market areas. Churchill (2002) reveals that purposive sampling is sometimes called judgmental sampling. The wards were handpicked because they serve the research of this particular study. Purposive sampling was utilized in this study to gain knowledge and information on the core issues under study. The main reason the researcher chose this type of sampling areas which were affected by poor solid management were already known. However it was additionally a requisite for the researcher to attain the thoughts residents which were being affected by poor solid waste management. Purposive sampling was selected to fulfill the requirements of this study. The other advantage of purposive sampling is that it saves time and money because instead of the researcher looking at the whole population in Beitbridge only a few people were selected.

Convenience sampling was another method used by the researcher to reach out to the individual respondents. However, in order to get different data the researcher sampled different areas which are distant to each other so as to avoid bias and getting information from one place. Much as structured interviews were conducted, the researcher purposively sampled a small group of vendors, traders, residents as the Town Council did not have an established database of these people.

3.6 Data Collection Instrument

Data collection instruments are techniques used to get information for the sample populace. The researcher made sure that the methods for data gathering were aligned with the objectives and research questions of the study. However, because this research is qualitative in nature questionnaires, interviews and documents were used to get necessary information related to this study. The advantage of using questionnaire, interviews and documents is that these enabled the researcher to get various answers from different sources and angles based on the targeted population.

3.7 Interviews

The researcher made use of face to face interviews dialogues which were between her and the interviewee. The benefit of interviews is that the researcher was able to obtain information immediately by hearing the thoughts and information which was being produced by the respondents. One of the major reasons for linking quantitative and qualitative techniques in this investigation was because the researcher questions required different types of data to get conclusions. Some of this information required use of structured interviews while others needed semi-structured interviews. According to Leedy and Ormrod (2005) interviews are used the researcher to gather information regarding peoples facts, beliefs, motives, present and past behavior.

3.7.1 Advantages of Interviews

The advantage of interviews is that it enables the researcher to obtain actual information at first hand through the dialogue with employees from various departments. Interviews help the researcher to be in a position to understand the challenges faced by BTC in managing waste and what affects their operations. Moreover, interviews explain more than the questions on paper, in simple terms they give the researcher to get more information since some of the questions on paper might not be understandable to the respondents.

Another advantage of interviews is that it enables the researcher to ask more questions as the interview is in progress, hence the increase of knowledge for both the interviewer and the interviewee as they will be exchanging ideas. The researcher took her time as she was interviewing the respondents, however the researcher did not manage to have more time to interview her targeted number because the council staff were a bit busy as they were doing work.

3.7.2 Disadvantages of Interviews

The disadvantage of interviews is that it can take a lot time since most of the respondents from municipals will be trying to justify their actions. Time can be one of the major constraints for the researcher since research is not limited to one person other people must be a bit interviewed to get accurate information. Face to face interviews can also be expensive since disadvantage of interviews is that respondents might choose to hide some official secrets there they deliver unfair and biased response, in this case the researcher got tide up by the council staff some could not reveal the information because of fear of the unknown.

3.8 Questionnaires

According to Key (1997) a questionnaire is a way of stimulating people's beliefs, attitudes, experiences through a set of questions asked on paper. Bulmer (2004) cited in Bird (2009) supports the same notion above as he states that a questionnaire is a set of well-established questions asked in a chronological order so as to attain information on the participant's behavior, attitude and reason for action with respect to the topic under study. To suit various stratus the researcher used bot structured and unstructured questionnaires. These questionnaires were sent via email and some of them were delivered door to door personally make sure that each respondent respondents filled the papers according to the research questions and objectives.

3.8.1 Advantages of Questionnaires

The advantage of questionnaires just like the interviews allows the researcher to get first-hand information from the respondents. The other advantage of the questionnaires is that it also allows the researcher to minimize costs and time because some the questionnaires are sent via email. Lastly questionnaires allow participants as closed sources since they remain unidentified resulting in their positive response to the questions.

3.8.2 Disadvantages of Questionnaires

The major disadvantage of questionnaires is that not all people are going to respond to your questions and not all people will be willing to participate some might even refuse because of the companies policy. However, another disadvantage is that respondents are not able to elucidate their feelings on paper. In this case the targeted council staff did not manage to fill in all the twenty questionnaires because most of them were busy processing council's business and to the targeted residents two of the questionnaires were attended to but returned incomplete due to fear of the unknown.

3.9 Document Analysis

The researcher made use of available books or literature on solid waste management issues in Beitbridge which has been acquired by the council over several years. This can be inform form of minutes from secretaries and the public relations office, town secretaries forum reports and other council records. The researcher wrote a letter asking for permission from the council so that she could acquire their official documents and records which were hindering good solid waste management in Beitbridge. The researcher was able to attain

information on one document which revealed the councils three year development plan and this document had limited data. The absence of other documents did not compromise the quality of the findings since the researcher had previously administered interviews and questionnaires. According to Byman (2004) some of these documents are not as objective as desired since they may contain light information.

3.10 Data Presentation

The researcher made use of pie chart, graph and tables to present information to represent the gathered information from the community and the municipal.

3.11 Data Analysis

Data analysis refers to the gathering of information according to similarities in the opinions and views of the participants. After data collection the researcher combined all the information from interviews and questionnaires. Statistical data presentation was in form of graphs and pie charts. The researcher also examined photographs which she took in various points where there poor solid waste management occurred.

3.12 Data Reliability

Data reliability refers to the levels of uniformity to which information is collected. To authenticate consistency the researcher made use of questionnaires, observations and interviews.

3.13 Pre-Testing

Pre-testing is where by the researcher does a preliminary study which is intended to detect mistakes in the data collection instruments. According to Grey (2009) pretesting avoids occasions where some questionnaires are not responded. The researcher used a preliminary test so as to detect and clear unnecessary mistakes in the data collection methods before carrying out the authentic exercise of information gathering. Pre-testing was done to a small group of people where interviews and questionnaires were administered. The pre-testing was conducted to the targeted residents whom failed to complete the questionnaires.

3.14 Ethical Considerations

According to Resmik (2007) research ethics are guiding rules which assist researcher in carrying out research. Flick (2014) notes that ethical considerations deals with giving a brief outline of your research to participants, notifying them about your objectives of the study and

your expectations. The researcher guaranteed the respondents that their information will be secret and no one can be able to trace where it came from. Lastly the researcher had to dress in a formal way so as to create a favourable conducive atmosphere for both the researcher and the respondent.

3.15 Summary

This chapter's main objective was to identify different techniques of data which were employed by the researcher in collecting data. The key intention of this chapter was to examine research techniques, sampling methods and data analysis methods used in this study. A full account on how the data needed for the study was attained .The next chapter will present the information, statistics that has been obtained using graphs and pie charts.

CHAPTER IV

DATA PRESENTATION AND ANALYSIS

4.0 Introduction

This chapter summarizes the research findings on the challenges of Solid waste management in Beitbridge. It tries to give a framework of the findings through the presentation, analysis and interpretation of data. Interviews, document analysis and questionnaires are the data collection methods which I used to gather information. In this chapter information will be presented in the form of pie charts, tables and graphs. Photographs are also included in this chapter to give clarity on the subject under study.

4.1 Response Rate

In this study, a total of thirty questionnaires were distributed, whereas twenty were given to the general staff of the Beitbridge town council and ten were given to the residents. Out of total questionnaires which were given to the council staff only seventeen were answered whilst to those administered to the residents nine were fully answered and one was left incomplete. The researcher made a follow up after two days at the council and got all the twenty questionnaires, however only seventeen were answered. The table below outlines the questionnaire response rate of both the staff and the residents respectively.

Table 4.1.1 below illustrates the completion rate and questionnaire rate for all the thirty questionnaire issued.

Targeted groups	Questionnaire distributed	Questionnaire returned	Questionnaire Completed	Response percentage	Completion percentage
Council staff	20	20	17	100%	83%
Residents	10	10	9	100%	90%

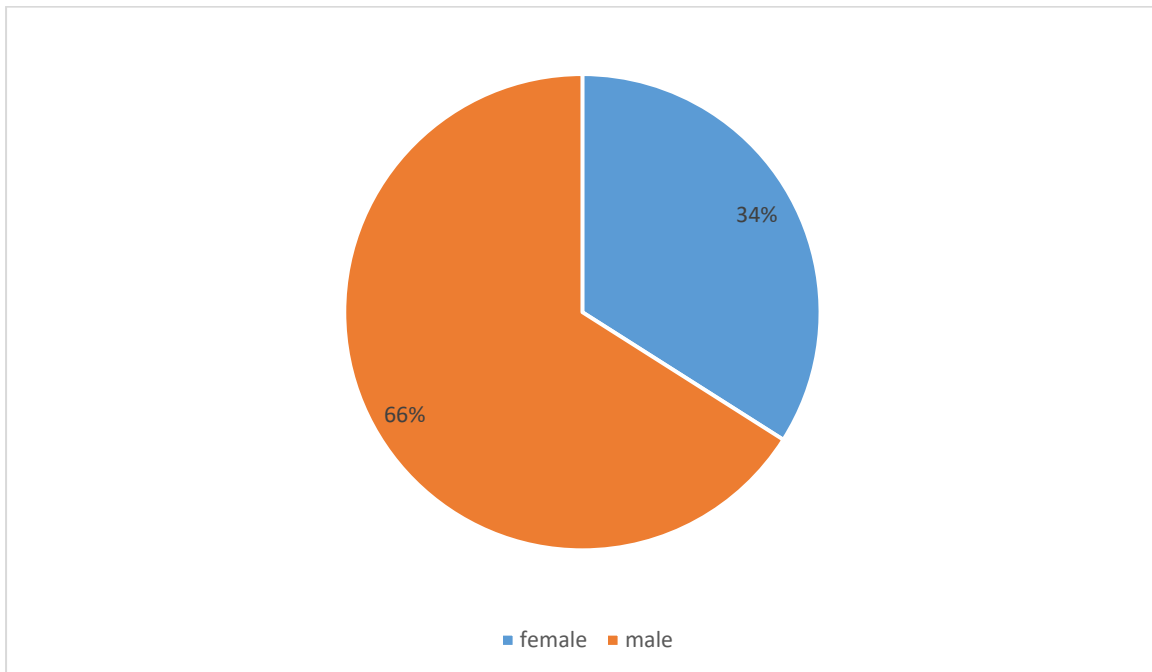
4.1.1 Questionnaire Completion Rate

The table 4.1 above summarizes the questionnaire completion rate. Of the 20 questionnaires administered to the council staff and 10 was given to the residents. 83% were in completion relating to the given questions and 17% were incomplete according to the questionnaire offered to the council staff, were as 90% managed to complete and 9% of respondents failed to complete the questionnaires. However, it must be noted that the responses were diverse based on individual perceptions.

4.2 Demographic Characteristics of Respondents

Figure 4.2.1 indicate the numbers and percentage of both men and women who partook in the questionnaire assessment carried out in the border town of Beitbridge. The percentage of male and female participants in the Beitbridge town council ranged from 34% to 66%, respectively, whereas from the residents it ranged from 44% to 56%. This reveals that most of the questionnaires which targeted the residents were mostly answered by females, whereas among the council staff those who responded mostly were males. The gap or the difference between the female and male residents who were targeted was not very high likened to that of the council staff which had a huge difference between. This shows gender inequality in work places. From the point of view responses of females were highest in residential areas because most of them do not go to work instead they are house wives hence they are the ones who also receive councils services. At the town council those who are garbage collectors are men, hence they are the most affected than women.

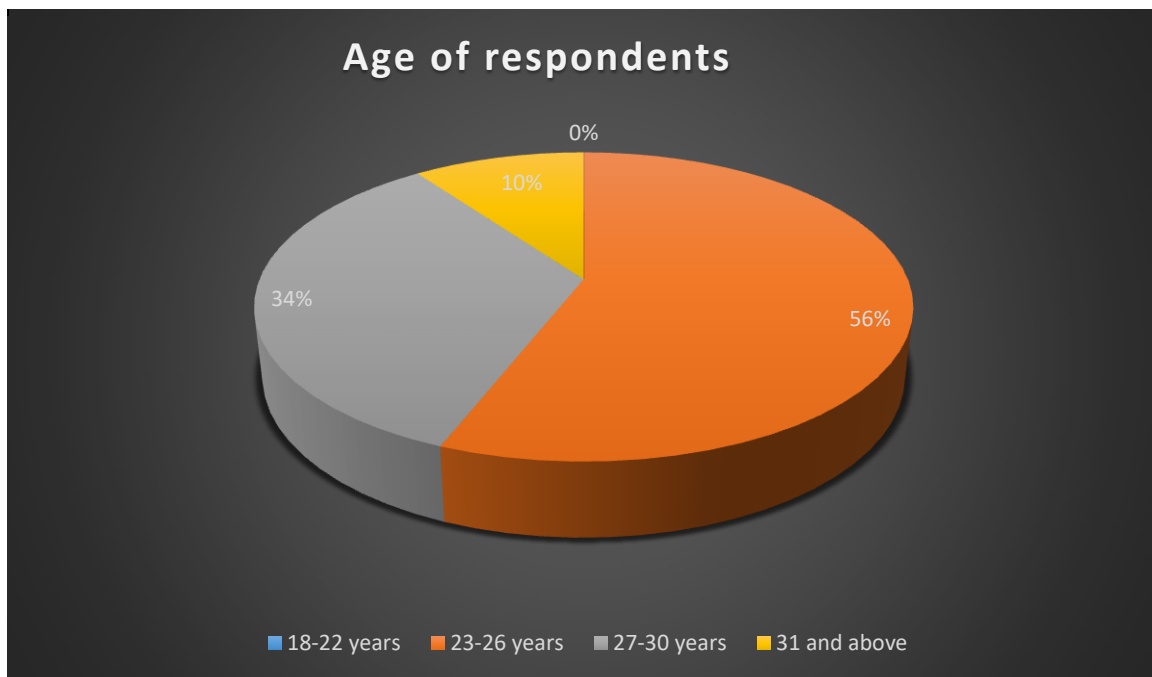
Fig 4.2.1 below shows Gender of respondents of council staff target population



Source: Field Research (2017)

4.3 Age of Respondents

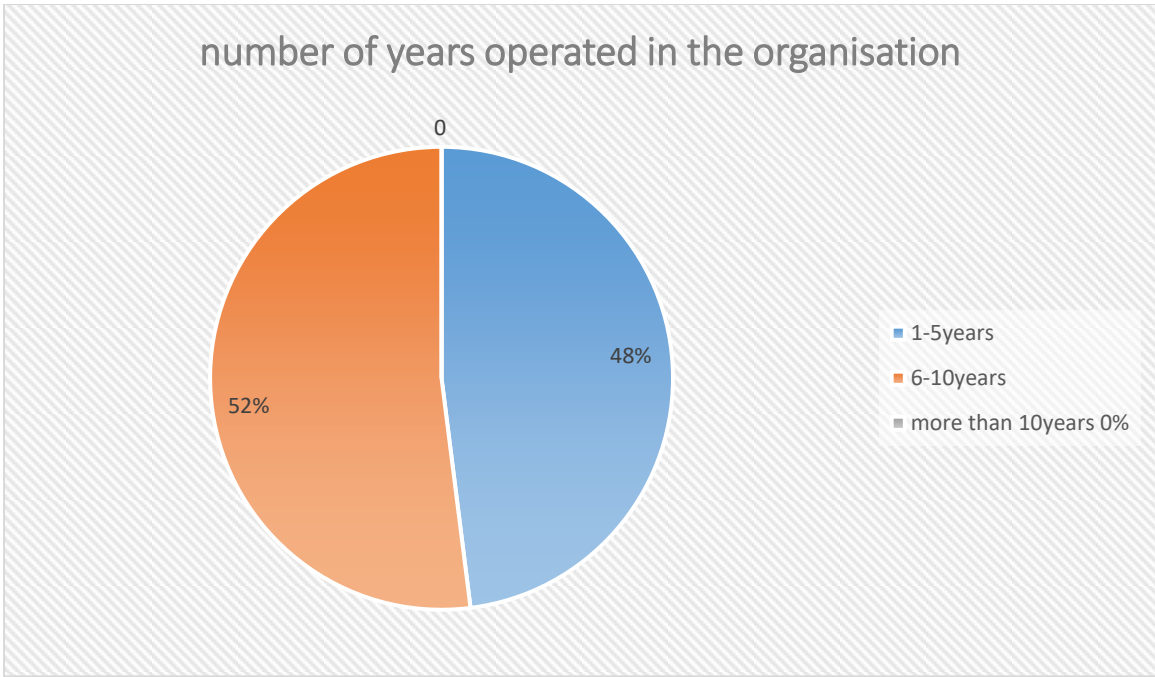
Fig 4.3 summarizes and outlines the ages of both the respondents (residents and the council staff). It states the number of years which the respondents have worked in the town council and it also reveals the number of years which have been lived by the residents in the border town .Fig 4.3 below shows the age of the respondents in percentages, the questionnaire had targeted ages from 18-22 are represented by 0%, 23years -26years are represented by 56%, 27-30years are represented by 34%, 31 years and above by 10%. However, from the general town council stuff there were no respondents in the ages ranging from 18 -22years.Ages 23-26years reveal that 56% answered the questionnaire thereby representing a greater number of participants while from the age's 27-30years only 34% responded. Above 31 years and above only 10 % participated.



Source: Field Research (2017)

4.3.1 Number of Years in the Organization

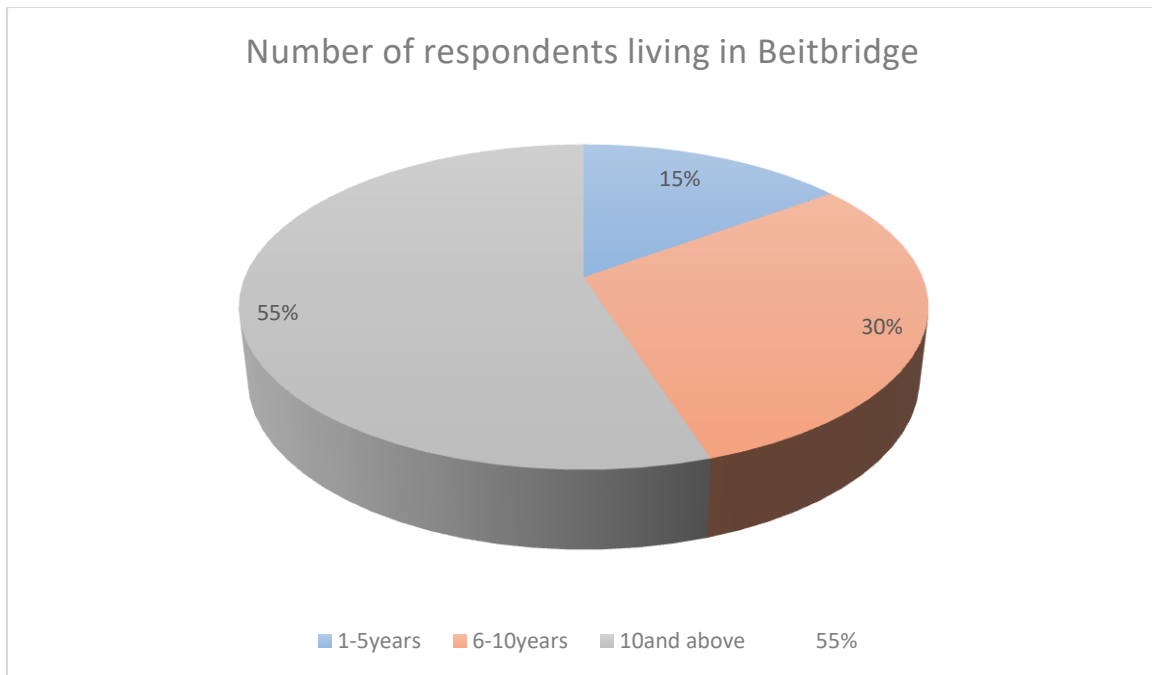
Fig 4.3.1 shows the number of years served by the respondents at the town council this is important in the sense that it assists the researcher in her findings of data, therefore the respondents' period in the organization would tell the information of how the organization functions. Out of twenty respondents, 48% is made by those who have given their services to the town council for fewer five years whilst participants who worked for 6-10 years are 52%. There are no respondents who have given their services for the town council for more than 10 years because it's been less than 10 years since the town council came to life.



Source: Field Research (2017)

4.3.2 Number of Years in Which the Respondents Have Been Living in Beitbridge Town

The questionnaires which were distributed to the residents also state the number of years one has resided in the border town. The period at which the participants lived in Beitbridge is important in the sense that it helped the researcher to analyze the data she obtained from the respondents, thus the more years the respondent lived in the town the more information the researcher gets. Fig 4.3.2 below shows the number of years in which the participants have lived in the town. Respondents who lived in the border town for one to five years were 15% and those who lived for more than six to ten years were 20%, whereas those who have lived for more than 10 years were 55%.



Source: Field Research (2017)

4.4 Questionnaire Response Analysis

4.4.1 Access to the Service Provision

96% of Beitbridge residents stated that refuse or garbage is collected once a week by the council garbage trucks. It is worth noting that there is some inconsistency in the collection of bins by the council due to a variety of reasons known to them. Furthermore, residents also revealed that the refuse collectors come before dawn to collect waste, thereby, by doing so some of the waste is left uncollected because most of the people will be sleeping. The uncollected waste is then transported to the nearby bushes by the owners leading to environmental pollution. Four percent of the participants revealed that uncollected refuse can take weeks without being collected to the dumpsite leaving them with no option but open dumping. Open dumping leads to domestic animals such as cows, donkeys and dogs scavenging leaving the area in a mess and smelly resulting to both land and air pollution. Some residents who stay near the bus terminus complained that most of the informal sector groups who do their business at the bus terminus are abusing the drainage as they throw litter inside. Below is a plate 4.4.1 which shows illegal dumping of waste in the drainage

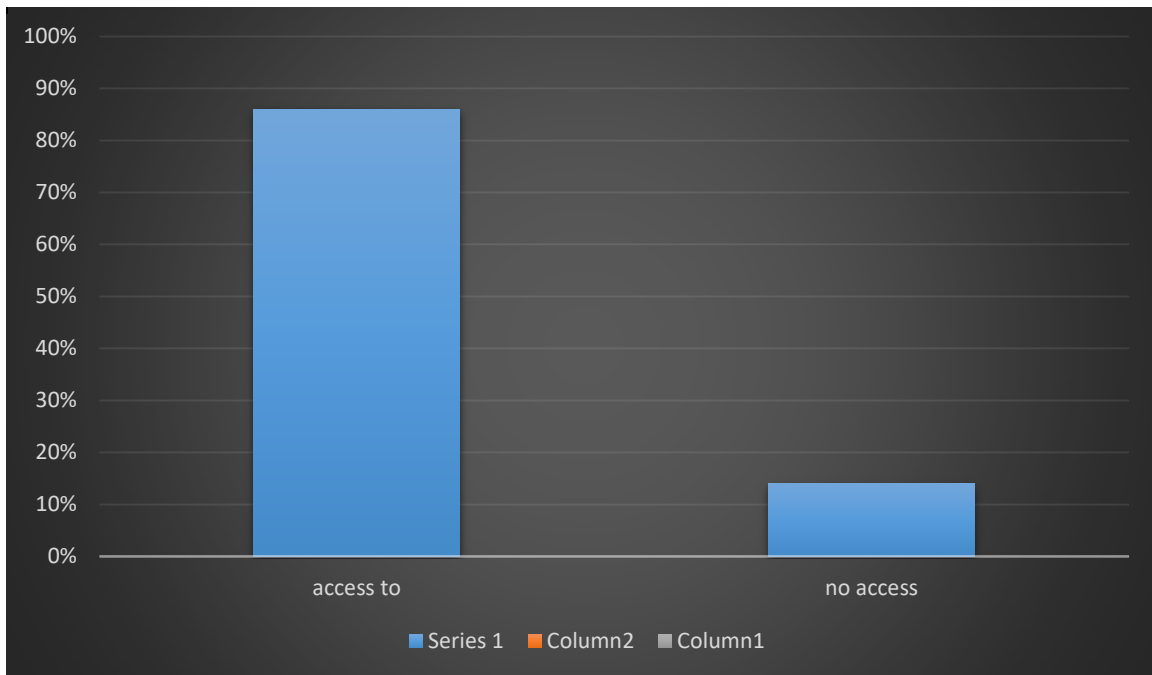


Source: field research (2017)

Plate 4.4.1 shows a photograph of an illegal dumping in the drainage at Dulivhadzimo bus terminus.

Residents also come up with strategies to reduce waste in their area by burning the garbage causing air pollution to those who stay nearby. Fig 4.4.1 below shows the percentage of those have the access to the services.

Fig 4.4.1 showing the rate of access to the service



Source: Field Research (2017)

4.4.2 Density Suburb

The questionnaire also wanted a voice for the residents to highlight which are they lived. 75% of the respondents were from the high density, which is called Dulibadzimo. Most of the complaints came from this group as they blamed the council for not bringing adequate services to their community 20% of the respondents came from the new medium density where they stated inconsistency in collection due to poor roads since the place is still new. 5% of the respondents were from the low density, they mentioned that they were not facing any challenges in service delivery as the garbage trucks visit their places every week and their environment is clean and the wall bins are emptied always.

4.4.3 Challenges Encountered

The questionnaires' main aim was to investigate and evaluate on the views of the respondents on the challenges affecting the town council on waste management. These challenges were attained in percentages for both who agreed and disagreed. The challenges are as follows:

Poor planning

A variety of council employees 68% noted that the waste management system is crippled due to the unavailability of a properly engineered landfill site. A site was identified by a consultant in 2012 and an EIA carried out and the report was approved by EMA. According to these respondents, the current refuse dump site management lacks capacity to adequately compact and bury the waste. It is not fenced and there is free access by animals and people who seek food and other household items from the dump site (scavengers). It therefore, must be noted that this challenge emanates from the poor planning of council officials. Guerrero et al (2013) notes that in most cases, management deficiencies are often observed in these municipalities. Thus as such the poor town planning is the result of management deficiencies. Some researchers that have investigated the institutional factors that affect the system have come to the conclusion that local waste management authorities have a lack of organizational capacities (leadership) and professional knowledge. The planning system in local authorities involves a master plan, strategic plan and an annual plan. Land is an essential aspect of the planning process. Of note is the problem of waste management is known to the council. Thus, not providing adequate land for waste disposal is as a result of very poor planning by the council planners. However 32% disagreed on poor planning as they noted that people are practicing illegal dumping henceforth in the areas affected there is no roads to access the areas due to illegal dumping.

Poor community engagement

Most of the people agreed on the poor coordination between the council and the community which therefore accounted to 100% solid waste management being a major challenge in the border town. The respondents noted that community participation is very low because the majority of residents think it is the duty of the local authority to maintain a clean environment, yet it is the duty of everyone to keep it clean and safe. It is noted that the operational efficiency of solid waste management depends upon the active participation of both the municipal agency and the citizens, therefore, socio cultural aspects mentioned by some scholars include people participating in decision making (Sharholly et al., 2008), community awareness and societal apathy for contributing in solutions (Moghadam et al., 2009). There is a need for the residents to be involved in policy making and respecting the laws of the local authority for the efficient service provision and problem solving.

Urbanization

100% of the respondents agreed on urbanization as a key problem which causes the ineffective solid waste management. Due to the bad economic situation currently facing Zimbabwe most of the people are moving from their areas to the border town in search of greener pastures thereby causing an increase in population resulting ineffective solid waste management. Tsiko and Togarepi (2012). In Kasekes (2005) accession population growth in the large cities and small towns of Zimbabwe has resulted in the rise of non-bio degradable plastics and bottles. Due to unemployment most of the people are flooded in the informal sector where they practice illegal vending and these people do not bother on keeping the environment clean hence they litter everywhere leaving the council efforts remaining in vein and unrecognized this is supported by the training and research support centre, civic forum on housing, 2010 which stated that, "... the rapid movement of people from urban areas in the last decade looking for greener pastures in the cities has resulted in local authorities in failing to provide enough services to the citizens".

Political interference

With the 73% of the respondents stated that political interference is another problem. Councilors around the town encourage people not pay for collection fees so as to gain political mileage during elections. This has resulted in people doing their own will resulting in them throwing of garbage everywhere. 27% disagreed and stated that there is a need to introduce new polices and stiff measures to those who go against the law. Makwara and Mugudu (2013) support political interference as they argue that the situation has been accelerated by political and economic problems which have been affected the country since the year 1999 and 2009, where corruption was rampant within the city councils contributing to the mushrooming of illegal waste dumps in most urban areas.

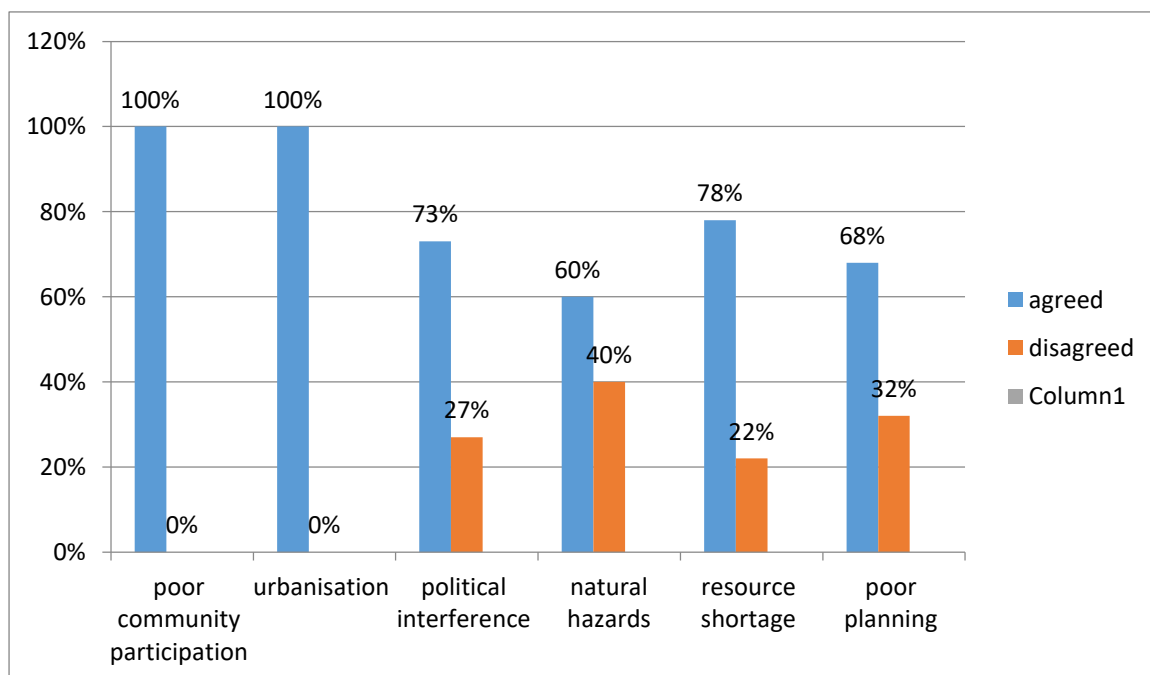
Natural hazards

60% of the respondents agreed that natural hazards such as floods cause ineffective solid waste management. For the past three years, whenever it rains in Beitbridge, floods destroy infrastructure such as houses and roads. Destroyed infrastructure, waste carried away by the floods ends up as solid waste over all the towns. However, 40% of the respondents disagreed on the natural hazards and they identify poor management practices.

Resource shortage

78% of the respondents shared the same sentiments, stating that there was a shortage in both physical and financial resources this is supported by the Ministry of Local Governance, Rural and Urban Development (1995) who reveals that poor solid waste management has been a result of the lack of refuse by collection vehicles...”. Blight and Mbande (1996, 236) as stated in Mudzengerere and Chigwenya (2012) point out shortage of tools and use of timeworn and unsuitable machinery which is unproductive in waste management in developing countries. As such local authorities have failed to manage solid waste due to financial issues as there is huge expenditure needed to provide for the service. However, 22% disagreed as they noted that there is mismanagement of resources. There is only one compactor used to collect waste the whole town and also few waste collectors to do the job. Fig 4.4.3 below summarizes the challenges encountered by the local authority.

Fig 4.4.3 summarizes the challenges encountered by the local authority



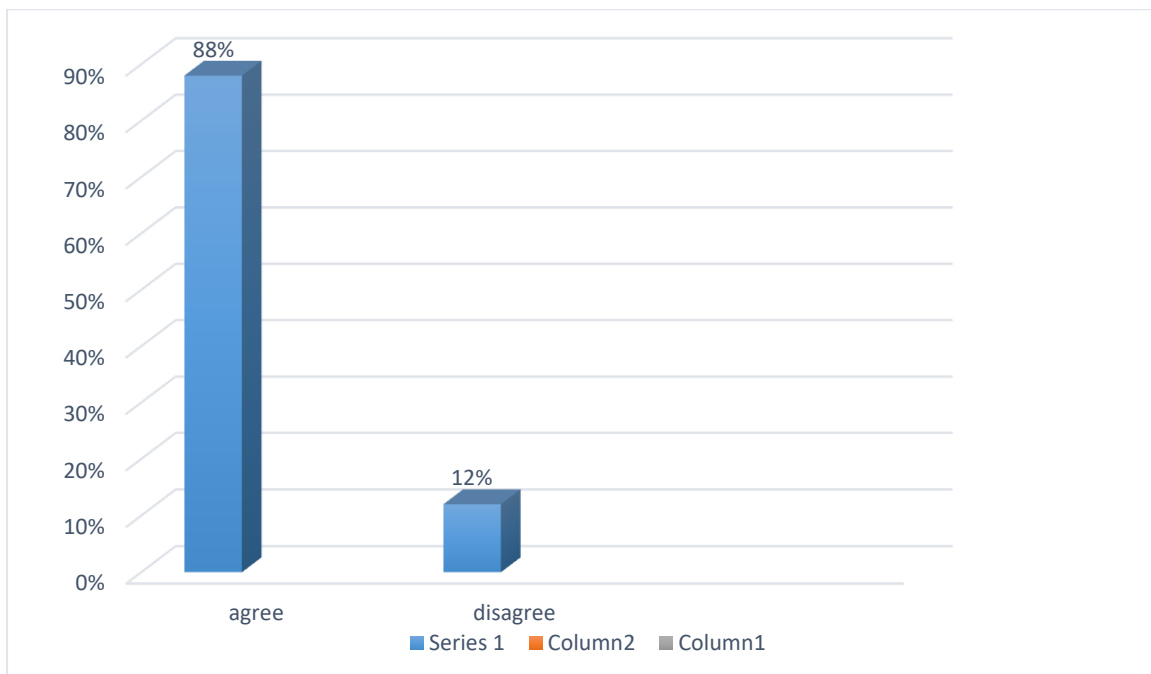
Source: Field Research (2017)

In Fig 4.4.3 the questionnaire shows the challenges faced by the local authority in managing waste.

4.4.4 Strategies Implemented in Addressing the Challenges

The questionnaire also implied that the participants to state if the local council has ever tried to come up with solutions in solving these challenges by means of ticking Yes or No in the questionnaire .Fig 4.4.4 below outlines and gives a summary of the responses from a Liker scale where the responses were given as either agree or disagree by the respondents on the strategies issued by the town council. The bar graph shows that 88% of the respondents agreed on the fact that the local authorities implemented some strategies to solve the challenges.

Fig 4.4.4 below gives a summary of the responses from liker a scale were responses were responses were given as either agree or disagree.



Source: Field Research (2017)

The respondents from both sides (the town council and the residents) listed the strategies and solutions which the local authority was supposed to do in order to manage solid waste. The questionnaire needed only three strategies from the respondents. However they came up with a variety of strategies in which the local authority implemented and the strategies are as follows:

Clean up campaigns

To enshrine waste management, the council staff noted that the council has been identified for its effort countrywide in setting aside a specific clean-up day in the town. 88% of the respondents noted that the local authority conducts in a monthly clean-up campaign whereby every council staff is involved and the residents freely join in the exercise. However 12% of the respondents disagree stating that the clean-up campaign strategy is not effective because some of the residents did not bother taking part in the clean-up campaigns since they believe it is the duty of the local authority to keep up a clean environment, this shows that most of the residents lack knowledge on waste management thus poor citizen engagement. This is supported by Ogawa (2005), "...he adds that the lack of proper education by the authorities has limited the technical expertise and little engineering and training for effective waste management in developing countries".

Creation of garbage sites

The local authority, according to 73% of the respondents, created garbage sites as a strategy of addressing the challenge of solid waste. They noted that the local authority designated nine (9) central waste collection sites in six (6) wards, so that communities and waste generating companies take their bins to the central sites where they empty them for council to collect. However, 27% disagreed as they noted that people living downwind are prone to suffer from diseases as the dumps serve as breeding grounds.

Engagement with Environmental Management Agency (EMA)

Stockholm (2013) reveals that the management of solid waste in Africa is a result of both citizens and the municipal agencies. Therefore, 100% of the respondents mentioned that the local authority engaged with agencies such as the Environment Management Agency (EMA) which has supported the project by providing bins at household level, this strategy has reduced pressure on local authority in waste collection and reducing numerous illegal dumpsites. The strategy is successful since EMA is providing daily monitoring in the affected wards.

Law Enforcement

Of note is that, 55% of the respondents also mentioned that the local authority come up with the adaptation of new policies which makes every resident keep an eye on each other thereby reducing the dumping waste. The local authority also managed to increase law enforcement

by providing daily monitoring officers in 50% of the most affected areas such as BTC, ZRP, EMA, Resident association. However 45% disagreed as they mentioned that it was just theoretically applied on paper but not practiced, thus Chenje (2002) support the above as he states that in Zimbabwe there are numerous laws which deal with solid waste, but the major problem is the application of these laws. Tevera (2002) argues that the disintegration of government organizations which deals with administering laws on solid waste management do not encourage a sound environmental management.

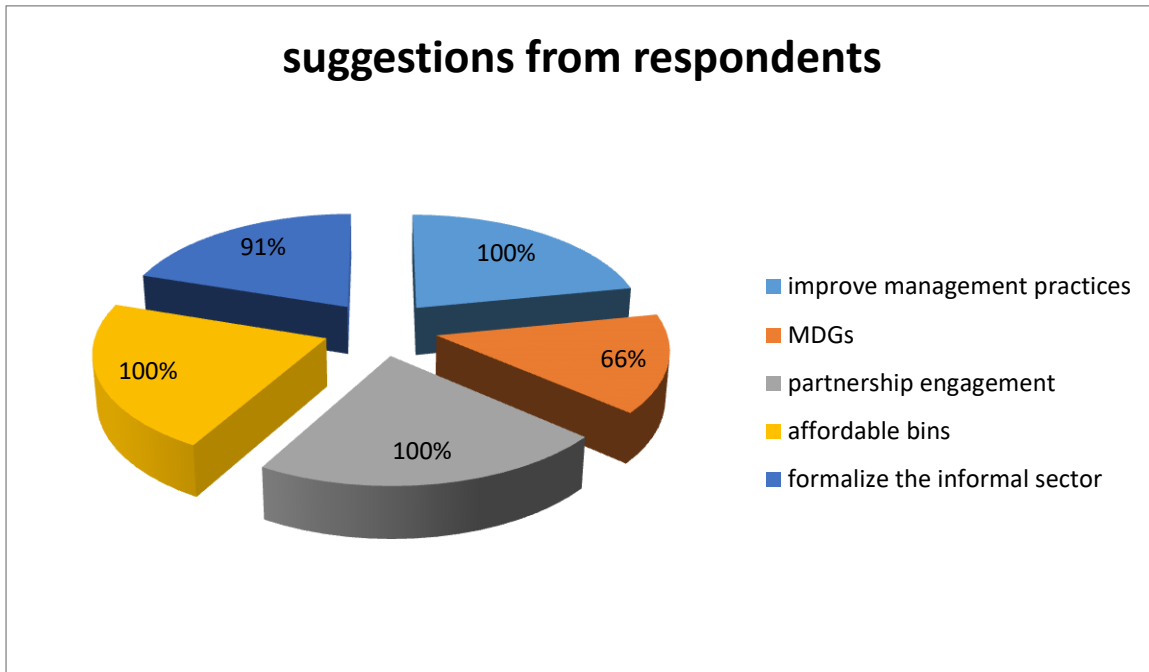
Partnering with Public Private Partnerships

Linking to the above, the targeted respondents mentioned is that the local authority partnered with PPPs such as Delta and Hunyani papers that assisted the local authority in waste collection by distributing empty drums with signage stickers.

4. 5 Suggestions from Respondents

The 100% of respondents suggested it is a prerequisite to improve the management practices of solid waste by both the people and the council. 66% respondents gave reference to the Millennium Development goals and the Sustainable Goals which noted that one of their goals was to ensure local authorities improved people's health hence this can only be done by managing waste first, thus according to Ali (2005), states that "the Millennium Development Goals aims at producing access to environmental sanitation and sustainability, but safe disposal of waste seems to be more than a dream and seems to go beyond the capacity of many countries". Furthermore, 100% the respondents suggested were need of partnerships between public and private companies in helping the council to solve the issues of poor solid waste management. 100% of respondents suggested by the local which is worth noting is that the council should provide the residents with cheaper or affordable bins. Thus, everyone can manage to buy the bins. 91% of the respondents suggested that since the country was in a bad economic situation and the council is also facing financial problems it should formalize the informal sector so as to get funds which would help in the planning system of service delivery. Fig 4.5 below shows the percentage of respondents who gave suggestions pertaining the challenges of solid waste.

Figure 4.5 shows the percentage rate of the respondents who gave suggestions on solid waste challenges.

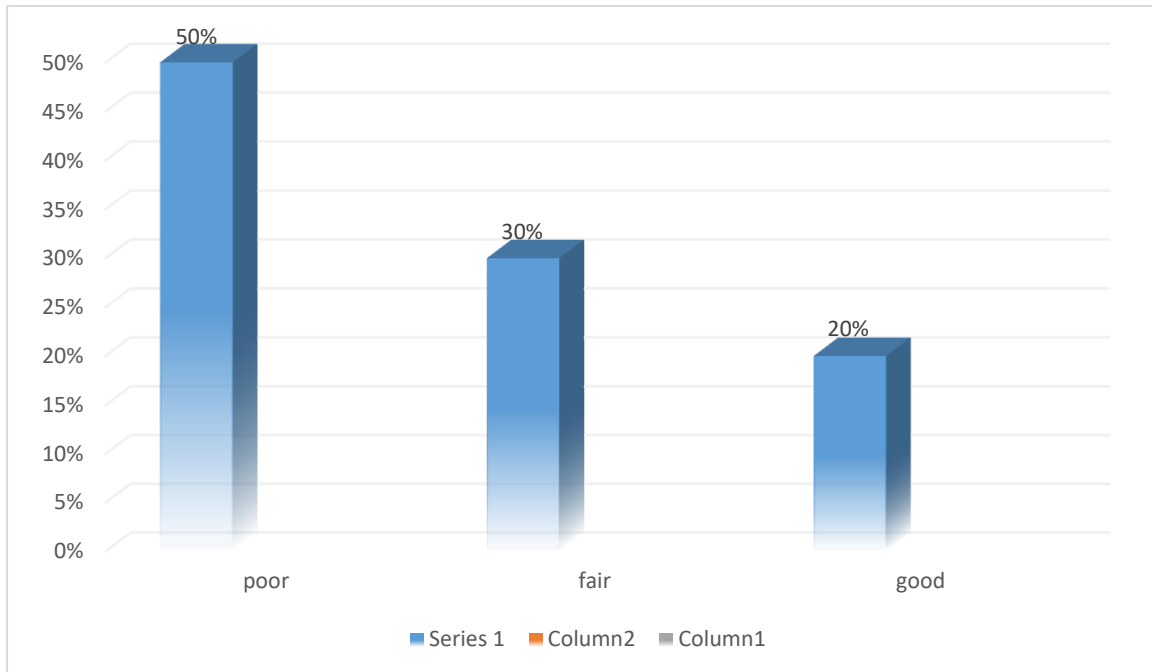


Source: Research Field (2017)

4.6 Rating the Service Provision

The questionnaire also required the participants to rate the services offered to them as either poor, fair or good. Fig 4.4.6 below illustrates the response rates given by the respondents.50% of the respondents stated that the service offered to them by the local authority was poor this is because of the poor collection schedule by the council. Reasons for the inconsistency in collecting waste are only known to themselves. Chaudhary Singh and Gupta (2014) support this as they argue that “...collection is challenging and costly. The timetable for waste collection in most communities is usually once or twice in seven days”. The management practices are said to be poor.30% of the respondents agreed that the services were fair since the local authority had managed to create garbage sites in every ward around Beitbridge.20% of the respondents agreed that the service being offered was good .These are the residents from the low density suburbs where the bins are given freely to the local residents residing in that place and that the local authority collects refuse in that area almost on a weekly bases.

Fig 4.4.6 shows the rate of service offered by the local authority Source: Field Research (2017)



Source: Research Field (2017)

4.7 Interview Response Analysis

4.7.1 Interview Response Rate of Beitbridge Town Council Employees

The researcher had aimed at interviewing at least five employees from the council but however out the five only three employees managed to respond to the questions because both the management and other employees were busy with other commitments. The researcher did the face to face interviews so as to have full information required by the questionnaire. Below is a table 4.5.1 which shows the interview response rate given by the employees?

Table 4.5.1 shows the interview response rate by the employees

Targeted group	Targeted interviews	Actual interviewed	Percentage
Council employees	5	3	70%

4.8 Factors Causing Ineffective Solid Waste Management to the Community

The questionnaire also required to understand the causes of the ineffective solid waste management to the community. Table 4.5.2 below summarizes the causes of ineffective solid waste to the community.

Factors	Percentage rate
Poor waste management practices for example burning of municipals and illegal dumping.	20%
Poor community engagement	25%
Expensive bins	15%
Economic instability	30%
Other factors	10%

Fig 4.5.2 summarizes the factors which cause in effective solid waste management in Beitbridge. Illegal dumping and the burning of waste consist of 25% due to poor waste management. 20% consist of the poor community engagement as another catalyst to poor solid waste management. Most of the community members have a tendency of being ignorant when it comes to the rules and regulations proposed by the council. They state that it their mandate (council) to collect refuse not knowing that their hand plays a vital role in solid waste for the town to progress and to be clean. The resident's attitude holds back the municipalities' effort to provide effective service provision to the community.

Expensive bins consist of 15%, most of the community members are complaining and furious about the council's expectation that every household must have a plastic bin and they want them to buy it from their office which is a good idea but the bins are unaffordable. The waste collectors refuse to collect buckets which are substitutes for bins hence this result in the illegal dumping of waste by most residents, thus according to Tadesse et al (2008) who support the above statement as he explains and analyses the statement that influences the decision of house-hold waste disposal. He found out that the supply of waste facilities has an impact in the choices of waste disposal. Insufficient supply of bins and the long distance to the waste collection containers resulted in people dumping their rubbish on the road side and open spaces". 30% rated the economic instability of our country as a reason why the council is not effective and efficient in providing services to the community. The local authority does not have enough capital assets such as compactors and refuse trucks which transport waste to

the dump site. Financial assets are also a major problem to the council since they fail to buy fuel for their trucks. 10% rated other factors for example abuse of equipment since most town council employees tend to abuse council property. . Fig 4.5.2 below shows a photograph of an illegal dumping in front of Grugudela supermarket.



Source: Field Research (2017)

Plate 4.5.2 shows a Photograph of an illegal dumping in front of Grugudela supermarket at Dulivhadzimo area

4.9 Effects and the Impacts of Ineffective Solid Waste for Waste Pickers and Communities

Poor solid waste management has a negative impact on the health of the residents who reside near dumpsites. Diseases such as Malaria and Cholera can hype because these poor managed dumpsites. According to Masundire and Saunyanga (1999) open dumping is a major cause of various health problems like malaria and cholera. Above all the mismanagement of refuse can be hazardous to waste workers and prevalence of social evils child labour. Informal pickers of waste usually use bare hands to collect their refuse there by exposing them to health risks like HIV and AIDS due to poor handling of hospital waste. Mader (2011)

supports the same motion when he states that poorly managed dumpsites affects human health. Poorly managed hospital waste can result in the transmission of incurable diseases like HIV/AIDS (Ramokate and Basu, 2009). Air pollution can result in respiratory problems, stress and skin problems.

4.10 Strategies Used in Addressing the Challenges

The interview also cited the strategies which the local authority implemented in trying to address the challenges encountered. The respondents mentioned that the town council was in partnership with agencies like Environmental Management Agency, which provide bins for the people. The advantage of this strategy is that it eases pressure on the municipal in waste collection and reducing illegal dumping. Ignorant residents are punished by the Environmental Management Agency. The interviewee also mentioned that the town council partners with the town council in clean up campaigns in order to let the people aware about the dangers of dumping litter everywhere. . The local authority also designated nine (9) waste collection sites in six (6) wards, it managed to create wall bins so that communities and waste generating companies take their bins to the central sites where they empty them for council to collect.

4.10.1 Success of the Strategies Implemented

The respondents recommended that the approaches are effective to some extent as Awareness campaigns help inform and educate residents on how best to handle waste. EMA is giving punishments to ignorant residents; this helps the Beitbridge council in managing solid waste. However the respondents noted that there is need for a more required community participation to be more effective.

4.11 Measures Suggested by the Interviewees

The interview guide also aimed at getting information from the interviewee's own views on how to address the challenges. The respondents revealed that the local authority to create awareness campaigns through commemoration of World Environment Day which includes all stakeholders for example churches, NGOs, vendors etc. Educate the community on solid waste management practices. Increase properly managed dumping sites, to establish recycling facilities. Local authority should also contract out to overcome the challenge of shortage of machinery.

4.12 Summary

The chapter's intention was to scrutinize and present obtained by the researcher when she went to the field. It also explains various instruments which were employed by the researcher in data presentation, such as use of tables, pie charts, graphs and photo graphs. The above mentioned instruments help in explaining the data collected and address the research questions. The next chapter will give recommendations and concludes the study.

CHAPTER V

CONCLUSIONS AND RECOMMENDATION

5.0 Introduction

From the findings of this research conclusions and recommendations are given in this chapter, which Beitbridge town council can confer with concerning the challenges of solid waste management which it is facing.

5.1 Summary

The study was influenced by the awful nature of solid waste in Zimbabwe local authorities which is making the local authorities to delivery good services to their people the society. The government of Zimbabwe and the local authorities adopted policies and strategies in addressing the challenges but however, they are fruitless as the situation is making worse every day. The research used Beitbridge Town Council as a case study in challenges being faced by local authorities in solid waste management.

In this research the study provided knowledge and detail on the topic under study, it also stated the difficulties that were found in achieving this research. To show the significance of the study, the research also focused on dealing with the research questions and objectives given in chapter one which guided the researcher and also assisted in crafting the questionnaires, so as to come up with the challenges affecting the town. The study also wanted to assess the factors affecting the community as well as the challenges affecting the local authority.

The study looked at other works which were done by prominent scholars around the world who researched on solid waste management. The literature also looked the factors affecting solid waste management for example citizen participation, political influence, resource shortage etc. The above facts were used in the research finds so as to imply the information which the researcher got from the targeted population and also to come up with a firm conclusion and recommendations on the challenges recognized.

Various techniques which were employed in data collection were also explained in the research methodology that is chapter three. The key intention was to examine the techniques, sampling methods and data analysis that were used in study.

Information was also presented in chapter four of the research findings of solid waste management in Beitbridge. Various instruments were used which were employed by the researcher in data presentation, such as tables, plates, chats etc these instruments helped in explaining the data collected and also in addressing the research questions and objectives.

5.2 Conclusion

The outcomes of this research disclose that solid waste management in Beitbridge is poor and ineffective, dues to challenges such as poor community engagement; lack of machinery such as refuse trucks, compactors, there is also poor waste management practices such as burning of municipals and illegal dumping, poor enforcement of the legislations.

In Beitbridge town solid waste is inconsistently done, the council sometimes skips weeks as they do not collect waste at households, in this case they need to schedule their table so that it won't be difficult to them unless they have other reasons which are known to them. This has resulted in poor practices such as illegal dumping and burning of municipal wastes.

In this research the study also focused on tackling the research questions given in chapter one which guided the researcher and also assisted in crafting the questionnaires, so as to come up with the challenges affecting the town.

There is need of serious attention concerning solid waste management in Beitbridge because the resources such as refuse trucks are lacking and the only functioning vehicle is one compactor, of which it cannot manage to cater the whole of the town since it is developing and in most areas most people are complaining as they are not receiving the services.

The residents seem to have little knowledge on how the local authority functions in terms of the solid waste management. They believe it's the duty of the council to make sure that the environment is clean; this shows poor community engagement is due to lack of awareness campaigns, therefore local authority management should start acting up not to sit on their positions.

5.3 Recommendations

□ If local authorities whom are the city leaders change their mindsets and attitudes towards waste and begin to consider it as a resource by reducing production of waste and by maximizing the use of reusable and recyclable materials Zimbabwean towns would win the case of ineffective solid waste management. This can be done if the local authorities teach their communities through public campaigns.

- Beitbridge town council should sell bins at an affordable price, so that every household can afford to buy, this will also increase their source of revenue since everyone would afford to have one in his/her compound.
- The council should involve the community whenever they conduct meetings concerning service delivery so that they know the gaps that need to be filled since the people are the ones whom are affected. This will help in managing waste and it will also improve community participation.
- There is need to formulate a national long term solid waste management policy to address the challenges facing not only Beitbridge town council but the whole country of Zimbabwe.
- Local authorities as the city leaders, they should provide education to the people at all ages encompassing children and adults on solid waste management and telling them their importance through conducting campaigns and seminars because we might blame the community saying they are ignorant but some practices done by the community is due to lack of awareness.
- They should also strictly enforce by-laws on solid waste management and delegate responsibility to the municipal police to do their job thoroughly without fail.
- Also the central Government to increase the budget so that the local authorities would buy enough equipment's and facilities for solid waste management.
- The central government must try all possible means to minimize political influence. Politics is contributing in crippling service delivery; most councilors do not bother about development but satisfying themselves during their term in office.

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APPENDIX 1

QUESTIONNAIRE FOR MIDDLE MANAGEMENT AND GENERAL STAFF

My name is VimbaiMulaudzi, I am a fourth year student undertaking BSC Local Governance Honors Degree at Midlands State University. In partial fulfillment of my degree I am expected to carry out a research project therefore the research is titled, “Challenges being faced by Local authorities in Solid Waste Management; the case of Beitbridge Town Council. The intention of this questionnaire is merely for academic purposes to assist us understand the current state of Solid waste management in Beitbridge Town Council and it will also help other local authorities to improve services to its people. The researcher is kindly asking for your assistance as you respond to the research understudy by filling in this questionnaire. Information that you would give will be treated highly confidential.

Section A: General information

Instructions to respondents

1. Please answer by putting a tick on options given.
2. Please provide accurate answers.
3. Express yourself freely on open-ended questions.
4. Feel free to ask the researcher on questions that you do not understand.

NB: Remember information required is just for academic purpose therefore names of respondents are not necessary and the information will be held private and confidential

1.1 Gender Male
Female

1.2. Age range

18- 22years 23-26years 27-30years ars+

1.3 Occupation

.....
.....

1.4 Work experience

Below 5 years 6-10 years 10 and above

Section B: Challenges faced by Beitbridge Town Council in solid waste management.

NB: Beitbridge Town Council (BTC)

1. What challenges does Beitbridge town council face in solid waste management?

.....
.....
.....

2. Do you think any of following factors might contribute to the ineffective solid waste management in Beitbridge?

	YES	NO
a) Economic instability	<input type="checkbox"/>	<input type="checkbox"/>
b) Population increase	<input type="checkbox"/>	<input type="checkbox"/>
c) Political interference	<input type="checkbox"/>	<input type="checkbox"/>
d) Resource shortage	<input type="checkbox"/>	<input type="checkbox"/>
e) Natural hazards	<input type="checkbox"/>	<input type="checkbox"/>

If No write in the space below some of the factors that may be causing ineffective solid waste management

.....
.....
.....

3. Are there any effects of ineffective solid waste management and their impacts?

YES NO

If yes highlight effects below

.....
.....
.....
.....

4. Has the local authority ever tried to solve the challenges you mentioned above?

YES NO

If yes list any three strategies which the local authority adopted

.....
.....
.....

5. Are the strategies you mentioned effective?

YES NO

If yes in what ways are the strategies helping in addressing the challenges of solid waste management

.....
.....
.....

6. In your own view, what possible solutions would you suggest in order to improve this service provision?

.....
.....

Thank you for your corporation

APPENDIX 2

QUESTIONNAIRE FOR THE RESIDENTS

My name is VimbaiMulaudzi, I am a fourth year student undertaking BSC Local Governance Honors Degree at Midlands State University. In partial fulfillment of my degree I am expected to carry out a research project therefore the research is titled, “**Challenges being faced by Local authorities in Solid Waste Management; the case of Beitbridge Town Council**”. The intention of this questionnaire is merely for academic purposes to assist us understand the current state of Solid waste management in Beitbridge Town Council and it will also help other local authorities to improve services to its people. The researcher is kindly asking for your assistance as you respond to the research understudy by filling in this questionnaire. Information that you would give will be treated highly confidential.

Section A: General information

Instructions to respondents

5. Please answer by putting a tick on options given.
6. Also provide correct information that you know
7. Express yourself freely on undefined questions.
8. Feel free to ask the researcher on questions that you do not understand.

NB: Remember information required is just for academic purpose therefore names of respondents are not necessary and the information will be held private and confidential

1.1 **Gender** Male

Female

1.2. Age range

18-22years 23-26years 27-30years ars+

1.3 Occupation

.....
.....

1.4 Number of years in town

1-5years 6-10years and above

1.5 Access to services

Yes No

1.6 Density

High Medium Low

Section B: Solid waste management as a service provision by Beitbridge Town Council.

7. What do you think are causes of ineffective solid waste management at Beitbridge?
.....
.....
.....

8. What are the effects of ineffective solid waste management and their impact?
.....
.....

.....3a) how do you rate solid waste management as a service provision by BTC to the community?

Choose by ticking any of the boxes below:

Poor fair good

b) Justify your answer
.....
.....
.....

4. How have BTC tried to solve the challenges you mentioned above?
.....
.....
.....

9. To what extent are the strategies implemented by BTC effective in addressing the challenges of solid waste management?

.....
.....
.....

10. What measures do you think should be imposed towards dissolving ineffective solid waste management?

.....
.....
.....

Thank you for your corporation

APPENDIX 3

INTERVIEW GUIDE FOR EMPLOYEES

My name is VimbaiMulaudzi, I am a fourth year student undertaking BSC Local Governance Honors Degree at Midlands State University. In partial fulfillment of my degree I am expected to carry out a research project therefore the research is titled, “Challenges being faced by Local authorities in Solid Waste Management; the case of Beitbridge Town Council. The intention of this questionnaire is merely for academic purposes to assist us understand the current state of Solid waste management in Beitbridge Town Council and it will also help other local authorities to improve services to its people. The researcher is kindly asking for your assistance as you respond to the research understudy by filling in this questionnaire. Information that you would give will be treated highly confidential.

NB: Remember information required is just for academic purpose therefore names of respondents are not necessary and the information will be held private and confidential

1. What do you think are the causes of ineffective solid waste management at Beitbridge town council?
2. What are the effects of ineffective solid waste management and their impact?
3. Are there any strategies used in trying to address the challenges of solid waste management?
4. To what extent are the strategies effective in addressing the challenges of solid waste management?
5. What measures can you suggest would be useful in improving ineffective solid waste management?

Thank you for your corporation