

**ASSESSMENT OF WASTE MANAGEMENT SERVICE DELIVERY BY EMPLOYEES AND
COMMUNITIES OF NGAKA MODIRI MOLEMA DISTRICT MUNICIPALITY**

SELWANE GRACE MOSHOETTE

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SUPERVISOR: PROF O.I OLADELE

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DECLARATION

I, Selwane Grace Moshoeite declare that the mini dissertation for the Degree of Master of Business Administration at the North West University hereby submitted, has not previously been submitted by me for a degree at this or any other university, that it is my own work in design and execution and that all material contained herein has been duly acknowledged.

Signed:

Date:

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ABSTRACT

This study examined the assessment of waste management service delivery among employees and community members of Ngaka Modiri Molema District Municipality. The population of the study consisted of employees and community members. Sixty employees were selected randomly from employees and community members to make up a sample of 120. Data was collected using a structured questionnaire which was subjected to analysis using SPSS. Frequency counts and percentages were used to describe the data, while t- test statistics were used to compare the attitude of employees and community members towards service delivery. Also, correlation was used to test for relationship between attitude and constraints of employees and community members.

Majority of important constraints faced by employees towards service delivery show that 85% agreed that waste management record is kept, and seventy eight percent of employees revealed that record keeping is severe. Sixty seven percent of employees revealed that budget allocation is insufficient. The results further show that 95% of employees agreed that time schedule of street sweepers for internal control purpose is in place. Eighty two percent of employees agreed on lack of waste collection strategies. The results further show that 92% of employees indicated that there is poor policy implementation. The results show that majority of employees (90%) agreed on lack of working tools. Majority of employees (100%) expressed there is lack of security for street sweepers.

Majority of important findings on attitude of employees towards waste management service delivery revealed that 72% of employees agreed on grass cutting along the verge of roads for the safety and convenience of road users. Seventy seven percent of employees are positive on public education on waste management. The results further show 77% of employees are positive on organising special campaigns on waste management.

The main finding on constraints faced by community members towards service delivery show that 80% have knowledge on waste management. The results further show that 70% of community members agreed that services are affordable. There is lack of proper landfill site (77%); Poor public education (70%); Poor working tools (75%) and Poor supervision of waste personnel (70%). Community members revealed that 82% of queries on waste management are attended by the municipality as requested by community. Seventy two percent of community members agreed on limited information about waste management to community. Seventy three percent of community members agreed there is no proper evaluation of waste management done. Inadequate service coverage (some people not provided services) (70%) and complaints in ward meetings are not met (78%).

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Chapter One

1. Background

Ngaka Modiri Molema District Municipality (NMMDM) (formerly Central District Municipality) is one of the four districts of the North West Province in South Africa. Its capital is Mafikeng, which is also the capital of the Province. The other three municipalities are: Bojanala Platinum, Dr Ruth Mompati and Dr Kenneth Kaunda Districts. The NMMDM covers a surface of 31 039 square km and shares an international border with the Republic of Botswana. It comprises five local municipalities namely: Mafikeng, Ratlou, Ramotshere Moiloa, Ditsobotla and Tswaing.

The NMMDM has a total of 2, 788, 844 hectares equivalent to 26% of the total number of hectares of the North West Province. It has a population of 764, 351 which is equivalent to 24% of the total population (NMMDM, 2012).

The Constitution of South Africa (Act 108 of 1996, chapter 7) recognises the status of municipalities as spheres of government consist of municipalities, which must be established the whole territory. A municipality has the right to govern, on its own initiatives, the local government affairs of its community, subject to national and provincial legislation, as provided for in the Constitution. It recognises the establishment of the municipality Category C, which includes rural and urban areas and it also gives the municipality division of power and functions. After December 2000 local elections, the name Ngaka Modiri Molema District Council was changed to Ngaka Modiri Molema Municipality, Category C. The Local Government Municipality Structures (Act 117 of 1998) was also used to determine which type of municipality would be appropriate to serve Mmabatho, Mahikeng area.

District municipalities and local municipalities in South Africa, in areas which are primarily rural, are divided into district municipalities. District (or category C) municipalities are the main divisions of South Africa's provinces, they are subdivided into local (or category B) municipalities. Local municipalities share authority with district municipalities where they belong. Districts of South Africa are metropolitan and district municipalities' form the layer of government directly below provinces. Eight metropolitan municipalities and 44 district municipalities cover the entire South Africa with 226 local municipalities. Apart of Chapter 7 of the South African Constitution, the South African Parliament has also passed several pieces of legislation to deal specifically with local government in South Africa (Department of Justice, 2013).

In South Africa, a district municipality or Category C municipality is a municipality which executes some of the functions of a local government for a district. The District municipality will in turn comprise several local municipalities, with which it shares the functions of local government. District municipalities are seen as successors to former Regional Services Councils (RSC). District municipalities have a municipality code that consists of the letters "DC" followed by a number from 1 to 48. The "DC" reflects the fact that they were originally named "District Councils" Ngaka Modiri Molema District municipality code is DC38 of Mafikeng (Department of Justice, 2013).

Local Government municipal structures section 19 (2) provides that a municipalities council must annually review the needs of the community, its priorities to meet those needs, its processes for involving the community, its organisational and delivery mechanisms for meeting the needs of the community and its overall performance in achieving the objectives of the Constitution of South Africa (section 152). Chapter 5 (section 83) also provides that a district municipality must seek to achieve integrated, sustainable and equitable social and economic development of its areas as a whole. This is achieved by ensuring integrated development planning for the district as a whole, promoting bulk infrastructural development and services for the district, building the capacity of local municipality in its area to perform their functions and exercise their powers where such capacity is lacking and promoting the equitable distribution of resources between the local municipalities in its area to ensure appropriate levels of municipal services within the area. Municipalities have also assigned functions and powers in accordance with section 84.

1.1 Waste management

The National Environmental Management Waste (Act 59 of 2008) provides that everyone has the constitutional right to have an environment that is not harmful to his or her health and to have an environment protected for the benefit of present and future generations through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation, secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

1.2 Role of a municipality

The Constitution of SA, Act of 1996, section 153 provides that a municipality must structure and manage its administration and budgeting and planning processes to give priority to the needs of the community, promote the social and economic development of the community and participate in national and provincial development programmes. Its objectives is to provide democratic and accountable government for local communities, ensure the provision of service to communities in a sustainable manner, promote social and economic development, promote safe and healthy environment and encourage the involvement of communities and organisations in matters of local government.

Gildenhuys (1997) asserts that for the municipality to fulfil its functions, a local government must render typical line function serviced to the public. In support of these public services, specific support services must be rendered to the line function of departments. These services may be classified along the same lines as the functions, namely: control and protection services, social welfare services, economic welfare services and support services. For the rendering of these services, specific activities must be undertaken. These activities are the responsibility of individual employees and should appear in their job description as their routine task. One of the municipal activities is Environmental health activities which involve night soil removal, sewage removal from septic tanks, street cleaning, removal and disposal of carcasses, pest control, inspection of premises for health hazards, and food inspection. The objectives of the local government is to control and protection objectives to control certain aspects of the environment and activities of individual citizens and to protect the public against all kinds of natural and man-made disasters; social welfare objectives to provide opportunities for the development of each citizen's social welfare and economic welfare objectives to provide opportunities for the development of the economic welfare of each citizen.

1.3 Community and waste management

Willmott (1989) emphasises two main points about community. Firstly, communities can either be of geographical nature or be communities of interest, where the link between people is something other than locally, for instance, people suffering from particular impairment. Secondly, there is both attachment and interaction between the members of the community (Twelvetrees, 2008). According to de Beer & Swanepoel (1998), the individual as a member of the community is assigned the role not of a subject but of an actor "who defines the goals, controls the resources and directs the process affecting his or her life" (Gran, 1983).

The Model By – law on waste management of 2011 section 5 provides that every person has a duty to manage any waste generated by his or her activities or the activities of those persons working under his or her direction in such a manner that the waste does not cause harm to human health or damage to the environment. In particular, the person must ensure that, waste generation is avoided and where such waste cannot be avoided, minimise the toxicity and amounts of waste, waste reduced, reused, recycled or recovered, where waste must be disposed of, the waste is treated and disposed in an environmentally sound manner, and the waste is managed in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts (Department of Environmental Affairs, 2011).

1.4 Relationship between employees and the community

The National environmental management Act 59 of 2008, section 10 provides that each municipality authorised to carry out waste management services by the Municipal Structures Act 1998 (Act no. 117 of 1998) must designate in writing, a waste management officer from its administration to be responsible for coordinating matters pertaining to waste management in that municipality. The Waste management officer must coordinate his/her activities with other waste management activities in the manner set out in the national waste management strategy established in terms of section 6 or determined by the Minister or by notice in the Gazette.

The *Batho Pele* “putting people first” principle is an initiative to get public servants to be service oriented, to strive for excellence in service delivery and to commit to continuous service delivery improvement. It is a simple, transparent mechanism, which allows customers to hold public servants accountable for services they deliver (Batho Pele Handbook, 8).

Model by law on waste management section 17 provides that any person handling waste within the municipality, either through storage, collection, transportation, recycling or disposing must take reasonable measures to prevent nuisance, injury, harm, damage, annoyance or inconvenience to any person and the environment; take measures to remedy any spillages, harm, damage or nuisance, referred to section (a); and at their own cost, clean any waste causing nuisance to any person or the environment (Department of Environmental Affairs, 2011).

De Beer & Swanepoel (1998) assert that the community usually is defined in terms of geographic locality, of shared interests and needs, or in terms of deprivation and disadvantage. According to Parnell et al. (2002), local communities are incorporated in the decision-making process through democratisation and participation. Electoral democracy ensures that individuals have a voice in (local) government. Democratisation has been achieved at the national level through the democratic elections of 1994 and 1999, and at the local level, through the local government elections of 1995 -1996 and 2000. Public participation through community forums is a key concern running through all of the stages of Developmental local government.

Model by law on waste management section 7 provides that: any person or owner of the premises where general waste is generated must ensure that such waste is stored in a receptacle provided or approved by the municipality. Any person or owner of the premises contemplated in section 1) must ensure that the receptacle is stored inside the yard where applicable, away from the public area when still waiting for collection; on agreed collection date, it should be placed outside the premises in an area accessible to the municipal officials or service providers; pollution and harm to the environment is prevented; and measures are in place to prevent tampering by animals.

Model by law on waste management section 16 provides that no person may cause litter, sweep any waste into gutter, onto a road reserve or onto any public place; disturb anything in, or remove anything from any receptacle which has been placed for the purpose of collecting litter in such a manner as to cause the contents of the receptacle to spill or fall onto the ground around it. The municipality may require any person or owner of the premises to separate their waste and use different receptacles provided by the municipality (Department of Environmental Affairs, 2011).

1.5 Concepts of Environmental Management

The Constitution of 1996, Section 24 provides that everyone has the right: to an environment that is not harmful to their health or well being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that- prevent pollution and ecological degrading and promote conservation. Section 152 (1) of the Constitution also provides that the objects of local government are - to ensure the provision of services to local communities in a sustainable manner and to promote a safe and healthy environment.

1.6 Importance and dimensions of Environment Management

The National Environmental Management Act 107 of 1998 (S2.2) provides that people and their needs must be placed at the forefront of its concern and serve their physical, psychological, developmental, cultural and social interest equitability. Section 2 ss3 also provides that development must be socially, environmentally and economically sustainable. Section 2b provides that environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated and it must take into account the effects of decision on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option. Section 2c provides that Environmental justice must be pursued so that adverse environmental impact shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.

The National Environmental Management Act 107 of 1998, section 35, provides that there should be a conclusion of agreements between the Minister and every Member of the executive council and the municipality; they may enter into environmental corporation agreements with any person or community for the purpose of promoting compliance with the principles laid down in this Act. Section 2 ss 4H provides that the community is wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means. Section 2 ss 4O provides that the environment is held in the public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the peoples common heritage.

1.7 Waste Management as component of Environmental Management

The National Environmental Management waste Act 59 of 2008 s2, has as main objectives to: protect health, well being and the environment by providing reasonable measures minimising consumption of natural resources, avoiding and minimisation of generation of waste, reducing, recycling, and recovering waste, treating and safely disposing waste as a last resort, preventing pollution and ecological degradation, securing ecologically sustainable development while promoting justifiable economic and social development, promoting and ensuring the effective delivery of waste services, remediating land where contamination presents, or may present a significant risk of harm to health or the environment and, achieving integrated waste management reporting and planning and to ensure that people are aware of the impact of waste on their health, well being and the environment.

The National Environmental Management Act 107 of 1998 (NEMA) section 2 ss2 provides that environmental management must place people and their needs at the forefront of its concern and serve their physical, psychological, developmental, cultural and social interest equitability. Ss3 provides that development must be socially, environmentally and economically sustainable. Subsection 4 provides that sustainable development requires the consideration of all relevant factors including the following: the disturbance of ecosystems and loss of biological diversity are avoided or where they cannot be altogether minimised and remedied, that pollution and degradation of the environment are avoided or where they cannot be altogether avoided are minimised and remedied, that waste is avoided, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner, that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied. NEMA section 11 ss 2 provides that every national department exercising functions involving the management of the environment must prepare an environmental management plan within one year of the promulgation of this act and at least every four years thereafter. Section 12 of NEMA provides that the purpose and objectives of the environmental implementation plans and environmental management plans are to: coordinate and harmonise the environmental policies, plans, programmes and decisions of the various national departments that exercise functions that may affect the environment or are entrusted with powers and duties aimed at the achievement, promotion and protection of a sustainable environment and of provincial and local spheres of government in order to-minimise the duplication of procedures and function, promote consistency in the exercise of functions that may affect the environment, give effect to the principle of cooperative government in Chapter 3 of the Constitution, secure the protection of the environment across the country as a whole, prevent unreasonable actions by provinces in respect of the environment that are prejudicial to the economic or health interest of other provinces or the country as a whole and to enable the minister to monitor achievement, promotion and protection of a sustainable environment.

1.8 Importance of Waste Management

National Environment Management: Waste Act 59 of 2008, section 9(1) provides that a municipality must exercise its executive authority to deliver waste management services, including waste removal, waste storage and waste disposal services. The Constitution of South Africa, 1996 section 152 (1) (d) provides that one of the objectives of local government is to promote a safe and healthy environment.

1.9 Dimensions of Waste Management

Model by law section 8 provides that the municipality may only collect waste stored in approved receptacles, set collection schedules for both commercial and residential properties for reasons of health, safety or environment protection, collect waste outside the set schedule on request by any person and at fixed tariff agreed to by both parties prior to collection, set the maximum amount of quantities of waste that will be collected, identify waste streams which may not be collected by the municipality or which are unsuitable for collection and where a case exists, advise the owner of alternatives. Section 10 provides that waste generated in the municipal area must be disposed of at waste directed by the municipality; any person disposing waste at a municipal owned disposal site must adhere to the site operational procedures approved by the municipality. Section 11 provide that any person who is undertaking activity involving reduction, re-use, recycling or recovery of waste including scrap dealers, by- back centres and formalised recycling groups, must before undertaking that activity, make sure that the activity is less harmful to the environment than the disposal of such waste and must notify the municipality of an intention to undertake such activity in writing (Department of Environmental affairs, 2011).

National Environment Management: Waste Act 59 of 2008, section 9 (3) provides that the municipality must exercise its executive authority among local standards for separation, compacting and storage of solid waste collected as part of the municipal services or disposed of at a municipal waste disposal facility, local standards for the management of solid waste that is disposed of by the municipality or at a waste disposal facility owned by the municipality, Including the requirements in respect of the avoidance and minimisation of the generation of waste and the re-use, recycling, recovery of solid waste and local standards in respects of the directing of solid waste collected as part of the municipal services or disposed by the municipal or that at a municipal disposal facility to specific waste treatment and disposal facilities and local standards in respect of the control of litter.

2. Statement of the research problem

This study focuses on Assessment of waste management service delivery by employees and communities of Ngaka Modiri Molema District Municipality. Assessing service delivery in terms of unconfirmed evidences that the community is not satisfied with service delivery of the municipality, are the workers following the guidelines of employments of waste collectors, mode of operation used (transportation of waste, waste handling, disposing of waste community member to register with municipality & to pay levy), this study assesses waste management service delivery among employees

and community members. One of the major functions of the municipality is waste management as enshrined in the Constitution of South Africa. The municipality is expected to participate in many consultation and decision process at local level for example, ward committees and integrated Development planning forum. To achieve this important functions and duty, a lot of investment has gone into waste management such that employees, infrastructure and facilities have been provided for effective service delivery. And total evidences support that service delivery protests are often highlight poor waste management services as well as industrial action by waste management employees. This study attempts to examine waste management service delivery from the perspective of employees in municipal offices and community members who receive services from the municipality.

3. Objectives of the study

The main objectives were to assess waste management

1. Identify personal characteristics of employees in waste management;
2. Verify personal characteristics of community members;
3. Evaluate waste management;
4. Determine waste management constraints in service delivery by employees and community members;
5. Assess perceived constraints to service delivery by employees and community members; and
6. Determine attitude towards service delivery in waste management by employees and community members.

4. Research questions

- a. What are personal characteristics of employees and community members?
- b. How would employees and community members rank waste management service delivery?
- c. What constraints are faced by employees towards waste management service delivery?
- d. What are the perceived constraints towards waste management service delivery among community members?
- e. What are attitudes of employees towards waste management service delivery?
- f. What are the attitudes of community members towards waste management service delivery?

5. Definitions

Community – A community usually is defined in terms of geographic locality, of shared interests and needs, or in terms of deprivation and disadvantage (De Beer & Swanepoel (1998).

Disposal means the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto any land (National Environmental management wastes act no 59 of 2008).

Municipality means a municipality established in terms of the Local Government: Municipal structures Act, 1998 (Department of Environmental Affairs, 2011).

Nuisance means any injury, harm, damage, inconvenience or annoyance to any person which is caused in any way whatsoever by the improper handling or management of waste management, including but not limited to, the storage, placement, collection, transport or disposal of waste or by littering (Department of Environmental Affairs, 2011).

Recycle means the process where waste is reclaimed for further use, which process involves the separation of waste from waste stream for further use and the processing of that separated material as a product or raw material (National Environmental management wastes act no 59 of 2008).

Reuse means to utilise articles from the waste stream again for similar or different purposes without changing the form or properties (National Environmental management wastes act no 59 of 2008).

Waste means any substance; whether or not that substance can be reduced, re-used, recycled and recovered (National Environmental management wastes act no 59 of 2008).

Chapter Two

Literature review

1. Introduction

This chapter presents the review of literature. This is organised in two sections; the first section is conceptual framework of the study, which reviews cases of selected studies on waste management and related factors. The second section is on theories on waste management which serve as theoretical frameworks.

2. Environmental Management

Read (1999) asserts that during the past century, the environment has periodically become a significant issue on the political and social agenda. Around the world, concern is growing for the environment, and never before in human history have environmental problems become such a central source of popular and scholarly concern. Today, the onus is on local authorities to implement strategies to deal effectively with their environments in sustainable, self-sufficient and environmentally acceptable manner. Solid waste management has been moved to the forefront of the public agenda.

Ogawa(2008) asserts that a typical solid waste management system in a developing country displays an array of problems, including low collection coverage and irregular collection services, crude open dumping and burning without air and water pollution control, the breeding of flies vermin and the handling and control of informal waste picking or scavenging activities. These public health, environment and management problems are caused by various factors which constraint the development of effective solid waste management systems.

Read (1999) asserts that Waste management policy, legislation and regulations are the primary means by which governments seek to control and influence waste management practice. In principle at least, there are many different policy options available to government covering a broad spectrum from 'carrot' (financial incentives) to 'stick' (strictly enforced regulations). Governments are increasingly implementing policies that are intended to impact on waste management policies and many initiatives have been taken in countries around the world over the last few years.

Popplewell (2011) emphasise that the National Environmental Management: Waste Management Act 2008 is the key legal instrument governing the management of waste in South Africa. It establishes a general duty of state to put in place uniform measures that seek to reduce the amount of waste generated, to ensure that waste is reused, recycled and recovered in an environmentally sound manner before being safely treated and disposed of. The act also assigns the responsibilities to various parties to implement its provisions- central government, provincial government and municipalities, producers and waste holders.

According to Jewaskiewitz (2011), South Africa has a much improved legislation in terms of both environment and waste management. However, the country has lagged behind in terms of service delivery. There are problems with the fundamental aspects of waste management, namely; collection and disposal. Collection at municipal level and, in particular, in informal and rural areas still leaves much to be desired and huge backlogs are evident in many towns. In many cases, although staff engaged in waste management are enthusiastic and endeavour to improve their skills in waste management and provide the required service to their communities, they become frustrated due to lack of support from senior officials and councils and, more importantly, the shortage of funding.

According to Keyter (2010), the public sector has been the main actor in service delivery and developmental activities in most countries in Africa until 1980. The public sector was the main actor in providing basic services such as primary education, health care, potable water supply and distribution, waste water collection, removal and treatment, solid waste collection and removal, and energy supply vital to poverty reduction and the achievement of the Millennium Development Goals. It is becoming increasingly clear that governments cannot meet the growing demand for services by acting alone and that there is indeed a need to solicit support from other employers within society to contribute towards service delivery. However, since basic services are public goods and since markets fail to provide such services equitably, the primary responsibility and accountability for their delivery remain with the state.

Adler et al (2007) asserts that Municipal governments are empowered to legislate on matters listed in Part B of Schedules 4 and 5 of the Constitution, which include control and management of waste as well as water and sanitation services. The Constitution, however, requires that the responsibility for waste management functions be devolved to the lowest possible level of government, in accordance with the right to self-determination.

According to Coetzee (2010) the overall municipal objectives in terms of new Waste Act, is to provide basic waste management service to all, to apply Council's (rates and tariff payers and government) funds sustainably, effectively and efficiently, to reduce impacts due to landfill, to enable and improve the recovery of economically valuable waste (recycles) (divert as much waste from landfill as possible for economic reuse).

One of the fundamental building blocks in any waste management system is the provisioning of adequate disposal facilities, which are properly designed, constructed and operated to minimise the impact on the environment. These issues remain a major challenge as there is ample evidence of non-existent or poorly managed disposal facilities, which can only be described as dumps (Jewaskiewits, 2011).

The appropriate management of waste substance (reuse, recycling or disposal) is then determined according to overall classification of waste, and falls within two primary categories: general waste and hazardous waste. General waste is defined as pre-classified waste that does not require treatment and includes domestic, building, business and garden waste, waste tyres and post-consumer packing (plastic, cardboard etc.). Hazardous waste is by definition any waste that contains organic or inorganic elements or compounds that may, owing to inherent physical, chemical or toxicological characteristics of that waste have a detrimental impact on health and the environment (IMIESA, 2011).

Cossu (2011) asserts that of all services required by society, waste management, energy production and health care are closely entwined with our everyday lives, with the level of service provided constituting a valid indicator of the degree of social and economic development of society.

Household waste accounts for 90% of municipal waste and includes waste from household collection rounds, waste from street sweepings and litter collections, waste from civic amenity sites and waste collected separately for recycling or composition. Additionally, household waste is an element of municipal solid waste, which by nature is one of the hardest sources of waste to manage effectively due to its complex composition and diverse sources of generation (Read, 1999).



Picture of Waste at the back of Mmabatho Megacity next to Statistics SA

Model by law on waste management provides that the owner of premises where the municipality is rendering services contemplated in model by law is liable for the payment of prescribed tariffs for such services and is not exempted from reduction of tariffs due to non usage, partial or limited use of such services. The municipality may, as it deems fit in an area where a municipal waste management services is not provided, after consultation with the concerned community, declare an area as demarcated for in site disposal of general waste. By law, it seeks to promote participation of all municipal residents in the promotion of responsible citizenship by ensuring sound waste management practices within residential and industrial environments. Every person has a duty to manage any waste generated by his or her activities or the activities of those persons working under his/ her jurisdiction in such a manner that the waste does not cause harm to human health or damage to the environment. In particular, the person must ensure that: Waste generation is avoided and where such waste cannot be avoided, minimise the toxicity and amounts of waste, Waste is reduced, reused, recycled or recoverable, Where waste must be disposed of, the waste is treated and disposed in an environmentally sound manner and the waste is managed in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts. Waste generated in the municipality area must be disposed of at a waste disposal facility as directed by the municipality (Department of Environmental Affairs, 2011).

Waste services provision arrangement - Municipalities to view solid waste management as technical service and manage it as such including hiring properly qualified solid waste management officials and where the external mechanisms of providing waste management services are required, the following should happen: service delivery agreement (contract) should be in place for all service providers within the municipality's area of jurisdiction. Health and hygiene promotion- Health, hygiene and safety promotion programme is established (Department of Environmental Affairs, Guideline for the designation of waste management officers).

3. Municipal services in waste management

Important aspects in this respect are outlined below at Political, socio-cultural, economic and environmental levels:

a. Political context

Ogawa (2008) asserts that the lack of effective legislation for solid waste management, which is a norm in most developing countries, is partially responsible for the roles/ functions of the relevant national agencies not being clearly defined and lack of coordination among them. Legislation related to solid waste management in developing countries is usually fragmented and several laws (e.g. Public Health Act, Local Government Act, Environmental Protection act, etc) include some clauses on rules/ regulations regarding solid waste management. It should be noted that the legislation is only effective if it is enforced. Because of the low priority given to the sector, the institutional capacity of

schedule for street sweepers ($t=2.532$), shows there is strong correlation between independent variable and age group, time schedule of waste collection in place and time schedule for street sweepers.

Age group, time schedule of waste collection in place and time schedule for street sweepers show that maybe the age of employees influence their attitude towards service delivery as it is an important factor in performing the daily routine duties of how things are done, at what time (time schedule) and at where these duties are performed (street sweeping), all these will make service delivery efficient and effective to community members.

These findings (age group) agree with the results of Cleveland and Shore (1992) who affirm that chronological age continuous to be an important predictor of work variables.

Variables	Unstandardised Coefficients		Standardised Coefficients	T	Sig
	B	Std. Error	Beta		
Gender	-2.329	5.202	-0.052	-0.448	0.656
Age group	4.366	1.961	0.254	2.227	0.03
Highest education qualifications	7.829	3.971	0.236	1.972	0.054
Type of job	0.092	3.037	0.003	0.03	0.976
record keeping	7.752	4.261	0.208	1.819	0.075
Limited budget	4.838	3.12	0.171	1.55	0.127
Time schedule	11.145	5.072	0.251	2.197	0.033
Time schedule for street sweepers	18.371	7.255	0.301	2.532	0.014
F	5.074				
R	.666b				
R square	0.443				

Table 6: Multiple regression analysis of determinants of service delivery among employees

local government agencies involved in solid waste management is generally weak, particularly in small cities and towns. These weak local government institutions are not provided with clear mandates and sufficient resources to fulfil the mandates.

b. Socio- cultural context

The social status of solid waste management workers is generally low in both developed and developing countries, but more so in developing countries than developed countries. This owes much to a negative perception of people regarding work which involves the handling of waste or unwanted material. Such people's perception leads to disrespect for the work and in turn produces low working ethics of labours and poor quality work. Because of insufficient resources available in the public sector, collaborative projects often have attempted to mobilize community resources and develop community self-help activities. Failed projects with inactive communities usually did not provide people in the community with economic as well as social incentives to participate in activities. The social incentive is based on the responsibility of individuals as part of the community for the improvement of the community and is created by public awareness and school education programmes. The lack of public awareness and school education about the importance of proper solid waste management for health and the well being of people severely restrict the use of community –based approaches in developing countries (Ogawa, 2008).

c. Economic context

Ogawa (2008) asserts that in general, solid waste management is given low priority in developing countries, except perhaps in capital and big cities. As a result, very limited funds are provided to the solid waste management sector by governments and the level of services required for protection of public health and the environment are not attained. The problem is acute at the local government level where the local taxation system is inadequately developed and, therefore, the financial basis for public services, including solid waste management is weak. This weak financial basis of local government can be supplemented by the collection of user service charges. However, users ability to pay for the service is very limited in poorer developing countries and willingness to pay services, which are irregular and ineffective, is not high either. In addition to the limited funds, many local governments in developing countries lack good financial management and planning. For instance, in a town in a developing country, over 90% of the annual budget provided for solid waste management was used up within the first six months. Obviously, an enhanced economy enables more funds to be allocated for solid waste management, providing a more sustainable financial basis. However, by definition developing, countries have weak economic bases and hence insufficient funds for sustainable development of solid waste.

d. Environmental context

Across the country, municipalities are struggling to take increasing numbers of items and process greater quantities in their recycling programmes despite limited resources. Undated, communities are continuing to recycle and finding inventive methods of protecting the environment. In some communities, consumers must rely on other means of recycling or proper disposal such as local business. For example, some local garages may accept used motor oil for recycling and many retailers have recycling centres to collect batteries, compact florescent lights, plastic bags, etc (Smith, 2012).

Ogawa (2008) asserts that a typical waste management system in a developing country displays an array of problems, including low collection coverage and irregular collection services, crude open dumping and burning without air and water pollution control, the breeding of flies and vermin, and the handling and control of informal waste picking or scavenging activities. These public health environmental and management problems are caused by various factors which constrain the development of effective solid waste management systems.

4. Challenges of waste

Ogawa (2008) asserts that as urbanisation continues to take place, the management of solid waste is becoming a major public health and environmental concern in urban areas of many developing countries. The concern is serious, particularly in the capital cities which are often gateways to the countries for foreign diplomats, businessmen and tourists. Poor visual appearance of these cities will have negative impacts on official and tourist visits and foreign investments. Recognising its importance, a number of developing countries have requested collaboration of external support agencies, both bilateral and multilateral, in improving solid waste management in their cities in the last 20 years or so.

Through investigation, carefully devised strategies, good communication and perseverance are essential in order to reduce the strain on an already overburdened system and landfills in particular (Resource 2010, Mother City scores green goal).

The European Union's approach to waste management: Being Wise with waste asserts that whether it is reused, recycled, incinerated or put into landfill sites, the management of household and industrial waste come at financial and environmental costs. First, waste must be collected, sorted and transported before being treated which can prove expensive and result in green gas emission and pollution of the air, soil and water. One major challenge is the fact that a large amount of waste generated each year- some 100 million tonnes- is hazardous, containing heavy metals and other toxins. These substances make the waste particularly difficult to treat as special processes are needed to deal with the hazardous components.

The EU's sixth Environmental Action Programme (2002-2012) identifies waste prevention and management as one of four top priorities. Its primary objectives are to ensure that economic growth does not lead to more and more waste. The EU's approach to waste management is based on three principles:

a. Waste prevention

This is a key factor in any waste management strategy. If we can reduce the amount of waste generated in the first place and reduce hazardousness by reducing the presence of dangerous substances in products, then disposing of it will automatically become simpler.

b. Recycling and reuse

The European Commission has defined several specific waste streams for priority attention, the aim being to reduce their overall environmental impact. Much of the waste we throw away can be recycled. Recycling reduces the amount of waste that ends up in landfill sites, while cutting down on the amount of material needed from the natural environment. Individuals have a very important role to play. In many member states, householders are asked to separate their waste into different material types (paper, glass, plastics, metal, garden waste and so on). Reuse involves the repeated use of products and components for the same purpose for which they were conceived. Refrigerators, ink cartridges and computer printers, for example, can all be refurbished for re-use. Individuals have a very important role to play (Being wise with waste: the EU's approach to waste management).

According to Marthinusen and Marshall (2010), in 2008, South Africa collected 1,595 million tons of packaging waste for recycling. 'We consumed 3,629 million tons of packaging and paper in South Africa in that year, including all paper, plastic, metal and glass packing as well as printing and writing papers. The only items excluded are wood packaging (pallets and wooden boxes) and printed books. The overall recycling rate of paper and packaging in SA in 2008 was 43.9%. This information was collected and verified by an independent organisation.

c. Improving final disposal and monitoring

According to Marthinusen et al. (2010), with regard to process to date, packaging accounts for some six to ten percent of mass to landfill in SA and 0.3% of solid waste generated in SA. Technology has enabled the packing industry to reduce mass without compromising the basic functions of the pack, for example, the beverage can in SA has been reduced to a weight of below 30g today versus 62g in 1966, and a new 750 ml lightweight glass wine bottle introduced in 2008 has reduced mass by 21%.

Marthinusen et al. (2010) asserts that they believe they are all working together towards the same goal- a better collection system that delivers more quality waste to recyclers who will have developed markets absorb this and this will in turn create better quality jobs.

Jewaskiewitz (2011) asserts that one of the fundamental building blocks in any waste management system is the provision of adequate disposal facilities, which are properly designed, constructed and operated to minimise the impact on the environment. These issues remain a major challenge as there is ample evidence of non-existent or poorly managed disposal facilities, which can be described as dumps. So what is the reason for this? Lack of qualified and experienced staff to fulfil the various roles in waste management and lack of adequate finance or budget to carry out these services. In consultation with various municipalities, these issues generally come to the fore. In many cases, although staff engaged in waste management are enthusiastic and endeavour to improve their skills in waste management and provide the required service to their communities, they become frustrated owing to lack of support from senior officials and councils and, more importantly, the shortage of funding.

According to Taiwo et al. (2008), the Polokwane Declaration sets targets and commits countries to reducing waste generation and disposal to landfills of 50% by 2012 and develops a plan for zero waste to landfills by 2022. Disposing of waste in a landfill is the most traditional method of waste disposal and remains common practice in most countries, including South Africa. Prior to the Polokwane Declaration, two key national policy frameworks were in operation in South Africa. These are the White Paper on integrated Pollution and Waste Management (IP & WM) and the National Waste Management Strategy (NWMS). The White Paper on IP & WM (Department of Environmental Affairs and Tourism, 2000a) was in response to the challenge to address the problems of environmental degradation. The collection and disposal of plastic bags reached climax in 2003 as thin non re-usable plastic carrier bags freely supplied by retail stores littered the streets to an extent that they earned a nickname, 'national flower' (Wikinews, 2005). This resulted in the degradation of the environment. To deal with the problem, the government introduced Plastic bag Regulation under Section 24d of the Environmental Conservation Act (Act 73 of 1989), which came into effect on 9 May 2003.

Neethling (2005) at the institute's integrated Waste management seminar held in Midrand in July, affirms that reuse and recycling are gaining momentum, driven by purely economic pursuits, but these processes are hampered by a lack of integration between separate enterprises. Integrated waste management requires an analysis of every possible element involved in waste management, based on hierarchy of desired outcomes. Handlers should consider financing, economical rate of return, social aspects, environmental impacts, technical analyses of equipment, including maintenance plans. One of the first insights to have emerged from the integrated approach is that street litter is the most expensive type of waste. Affordable waste management system discourages street littering and illegal dumping, so that money spent on waste service and on informing the public and private companies about service details potentially saves ten times that amount on clearing up litter and dumping. One

proof of this approach is that every waste worker on an organised municipal route handles seven tonnes of waste per day, while a street sweeper handles half a tonne per day.

The EU's approach to waste management: being wise with waste assert that we all have a role to play in ensuring that we get the best out of our waste. Householders can work to reduce unnecessary waste and separate waste to produce high-quality recyclable material.

According to Penny (2012), the principle of community-based waste collection presents the opportunity to engage the community in the process of waste collection. Primarily, the focus is on less affluent areas where unemployment is usually at its highest. Simple arithmetic will demonstrate that less sophisticated equipment is required for waste collection when the community is included in sustainable waste management. The concept of community-based waste collection requiring less capital equipment is fundamental where consolidation is maximised. If a collection vehicle, particularly a large compactor type, is compelled to visit every household, the time required to load the vehicle is determined by factors such as traffic congestion, accessibility, road conditions and more. On the other hand, if the waste was to be collected by the community in a managed fashion and consolidated, the collection vehicle would find itself completing a route in the half time otherwise required. Considering the capital and operational cost, saving by optimising the operation of the garbage compactor, the available saving is mortgaged and applied to the remuneration of the individuals within the community collecting and consolidating the waste. When distance to disposal becomes a problem, the concept kicks into overdrive and provides further entrepreneurial opportunities than ever.

5. Waste management plan

Waste management planning is the cornerstone of any national, regional or local policy on waste management. The establishment of a plan allows taking stock of the existing situation, defining the objectives of the need to be met, formulating appropriate strategies and identifying the necessary implementation means. The plans will set out an analysis of the current waste management situation in the geographical entity concerned, as well as measures to be taken to improve environmentally sound preparing for re-use, recycling, recovery and disposal of waste (European union, 2012).

According to Popplewell (2011), the Packaging Council of South Africa (PACSA) was approached by government and asked to draft an Industrial Waste Management Plan. PACSA consulted other organisations involved in the packing and paper supply chain, including all participants from raw material producers to retailers, including converters, packaged goods producers and also distributors and importers. The plan covers packaging and paper, defined as all packaging materials except timber and textiles and all printing and writing papers consumed in SA. It covers non-hazardous solid packaging and paper waste, both post-consumer waste and material that is discarded during

industrial processing. The key objective of the Plan is to increase the recycling rate for new packaging and paper from 44.5 percent in 2009 to 51 percent over five years.

6. Capacity building of Waste Management

According to Jewaskiewitz (2011), training and education remains the number one priority for IWMSA, particularly in terms of local government, where there is a dearth of trained and experienced waste management personnel.

There is lack of knowledge by the waste generators in terms of classification of hazardous waste streams they produce and consequently the disposal procedures of such waste. The same lack knowledge that applies to the hazard rating of the various waste streams. Waste generators also mention the apparent lack of specialist advice available from the Department of Energy and Trade regarding the correct disposal of hazardous waste (Resource, 2008, Gauteng's hazardous waste management plan aims for sustainable safety).

In most developing countries, there typically is lack of human resource at both the national and local levels with technical expertise necessary for solid waste management planning and operation. Many officers in charge of solid waste management, particularly at the local level, have little or no technical background or training in engineering or management. Therefore, the development of human resource, in the recipient country, for external support, is essential for the sustainability of the collaborative projects. Their school and university education and subsequent on the job training, are targeted for technologies of solid waste management applicable to these countries. However, there is lack of human resource with sufficient experience and knowledge of solid waste management problems and practices in developing countries. Opportunities to learn solid waste management problems and practices in developing countries, through regular training programmes and seminars, are rarely provided in industrialised countries (Ogawa, 2008).

Waste disposal on river banks is polluting and changing river courses and the creation of open dump disposal areas is threatening bordering residents. General burning of waste causes air pollution and unauthorised waste processing involving hazardous substances frequently make headline news (IMIESA, 2011)

Lacy (2011) asserts that the chain of events envisioned by the government starts with household, the biggest generators of this type of waste. Their message is avoid, reduce, reuse, recycle, and finally, if you can do anything else with it, burn it to create energy (recover). Households will be expected to separate their waste into different categories. This will then be collected and taken to different depots for sorting by waste pickers and recycling teams.

Beukering & Curlee (1998) assert that natural resources can be saved, emissions can be decreased and the burden of solid waste can be reduced. Likewise, recycling in the cases of some materials is an

important economic activity that creates employment and attracts investments. The term “recycling” has two dimensions – recovery and utilisation. Recovery refers to the diversion and collection of waste materials from landfills, incinerators, or other disposal methods. Utilisation refers to the processing of diverted waste into new and useful materials and products. More and more the value of material residues is recognised by entrepreneurs and municipal organisations. As a result, the recycling rates for various materials have grown rapidly on global scale.

At dump sites, transfer stations and street refuse bins, waste picking or scavenging activities are common scenes in developing countries. People involved have not received formal education and vocational training to obtain knowledge and skills required for other jobs. They are also affected by limited employment opportunities available in the formal sector. The existence of waste pickers/scavengers often created obstacles to the operation of solid waste collection and disposal services. However, if organised properly, their activities can be effectively incorporated into a waste recycling system (Ogawa, 2008).

Without sufficient and suitably trained staff, systems for waste management planning, regulation and enforcement cannot effectively be implemented. It is therefore important to ensure that adequate budgets are provided to enable responsible institutions perform their functions effectively. Salaries need to be set at levels that enable staff with the necessary experience and training to be attracted and retained (Section 4 Waste Management Legislation).

According to Mpungose (2012), landfill space is depleting and is impacting the environment negatively at an alarming pace, mostly because of rapid population growth in the inner City of Johannesburg (CoJ). The city of Johannesburg’s solid waste management service provider and the biggest waste management company in Africa unveiled its waste minimisation plan for the city-placing sustainability at the forefront of its operations. The CoJ’s population is growing at a rate of 9% annually. More than space issues, the local environment cannot withstand the sustained impact. As a city’s constitutionally mandated solid waste management company, Pikitup needs to find a meaning or sustainable way of reducing the levels of waste generated and ultimately disposed of at landfill. Looking at what constitutes waste, how it is generated and ultimately managed, Pikitup’s plan, moving forward, is to drastically cut down on waste produced in order to reduce what needs to be disposed of down the line. They are looking at reducing waste produced by residents, businesses and individuals so that they have less to dispose of at landfills. This is in line with the National Waste Management strategy, approved by cabinet on 10 November 2010. The strategy reveals trends on minimisation of waste and therefore reducing the negative impact on the environment. The ultimate objective was to change Pikitup’s current value chain from collecting, transporting and disposing to rethinking, reducing, reusing and recycling. Pikitup will bolster its education and awareness drive so that Johannesburg citizen can understand what the company is trying to achieve as not much can be

achieved without public support and active participation. Pikitup is looking to divert at least 33% of waste from landfills through a combination of product stewardship (take back) programmes where manufactures take back their own packing and other recyclable products and the development of facilities which promote reuse, recycling and composting. These initiatives will in turn increase CoJ residents' participation in recycling and support the roll out of infrastructure for waste diversion, such as materials recovery facilities, composting plants, waste transfer stations, builder's rubble plants and through extensive city wide education.

Nigeria is one of the biggest countries in Africa, with an estimated population of about 126 million (2003 estimate) and a total geographical area of 923, 768 square kilometres. It has a high population growth and rapid industrialisation, which precipitate wide environmental problems. Hence, waste generators, both domestic and industrial continue to increase and constitute one of the greatest environmental challenges. Many urban cities such as Lagos, Ibadan, Kaduna, Enugu, are identified with waste of various kinds including decaying food materials, plastic, glass, metals, nylon and papers which form heaps, blocking major routes and increasing traffic jams. Others are indiscriminate dumping of waste into open drainages and canals which often lead to flooding, open burning of refuse with thick carbon monoxide and hazardous gases polluting the air and threatening human health (FRN, 1997) (Ifegbesan, 2011).

7. Theories of community response

a. Behaviour Theory

Walsh (2010) asserts that the first major innovator in psychology was Wilhelm Wundt in Germany, the late nineteenth century "father of experimental psychology". Behaviour consists of ideas about how human action and emotions develop, are sustained and are extinguished through the principle of learning. Behaviour practice is also distinguished by commitment to the principles of traditional "scientific method" for helping clients to eliminate unwanted behaviours or acquire desired behaviours. The basic principles and assumptions of behaviours theory are as follows: Behaviour is what a person does, thinks, or feels that can be observed. Inferences about a person's mental activity should be minimised because it cannot be directly observed. People are motivated by nature to seek pleasure to avoid pain. They are likely to behave in ways that produce encouraging responses, or positive reinforcement. People behave based on their learning, by direct environmental feedback and also by watching others behave and interact. Behaviour is amendable to change. A prerequisite for clinical change is that the behaviour of concern must be defined in terms of measurable indicators. Thoughts and feelings are behaviours subject to reinforcement principles.

b. Cognitive theory

Schultz (2003) asserts that in the late 1950s, Leon Festinger proposed the theory of cognitive dissonance. This theory attempts to explain the relationship between attitudes and behaviour. Festinger reasoned that people do not like inconsistency and will therefore try to reduce the dissonance that they experience. The degree to which people will attempt to create consistency will depend on the importance of variables, the control the individual believes he or she has over the elements and the rewards that may be involved.

According to Walsh (2010), Cognitive theory is a motor theory, asserting that we do not merely receive and process external stimuli, but are active in constructing the reality we seek to apprehend. Cognitions include beliefs, assumptions, expectations and ideas about the causes of events, attitudes and perceptions in our lives. Cognitive theory postulate that we develop habits of thinking that form the basis for our screening and coding of environmental input, categorizing and evaluating that experience and making judgement about how to behave. An activating event produces a belief of thought that produces emotions or actions.

According to Walsh (2010), **Information processing theory** eventually gave way to motor theories, in which the mind is thought to play an active role in processing input, not merely recording, but also constructing its nature. This was placed, in turn, by models of the mind as engaging in parallel process, organising multiple activates in perception, learning and memory while it receives external information. That is, the mind is interactive with its environment.

According to Walsh 's(2010) **Personal construction theory**, the American psychologist George Kelly introduced a theory of personality in 1955 in which a person's core tendency is to attempt to predict and control the events of experience (Maddi, 1996). He described the essence of human nature as the scientific pursuit of truth – an engagement in empirical procedures of formulating hypotheses and testing them in the tangible world. Within the cognitive theory, there are no assumed drives or motivations that propel people to act in a particular way. We all develop patterns of thinking and behaviour through behaviour, through habit, but these patterns can be adjusted as we acquire new information.

c. Narrative theory

The originators of the Narrative theory for clinical practice are Michael White and David Epston, who lived in Australia and New Zealand, respectively. They began collaborating in the 1980s. The Narrative's theory major premise is that all people are engaged in an ongoing process of constructing a life story, or personal narrative that determines their understanding of themselves and their position in the world (Kelly, 1996; Monk, Winslade, Crocket, & Epsen, 1990). It holds that human

developments is inherently fluid, that there is no developmental “mile stones” that people should experience to maximise their chances for satisfying life. These life narratives are co- constructed with the narratives of significant people in one’s family, community and culture. According to the narrative theory, all personal experience is fundamentally ambiguous and thus we must arrange our lives into stories to give them coherence and meaning. These stories do not merely reflect our lives – they shape them. As we develop a dominant “story line” (and self concept), our new experiences are filtered in or out, depending on whether they are consistent with the outgoing life narrative. Many problems in living that we experience are related to life narratives that exclude certain possibilities for future action. The Narrative theory is premised on the idea that peoples’ lives and relationships are shaped by their life stories and the ways of life they develop based on those stories (Nicholas & Schwartz, 2001). Their stories are always unique, but are shared to some degree with others in their communities and they reflect the value system of those communities (Walsh, 2010).

8. Chapter summary

This chapter discussed issues such as environmental management, municipal services in waste management, challenges of waste, waste management plan, capacity building of waste management and theories on community responses such as Behaviour, Cognitive including information processing theory and personal construction theory and as well as Narrative theories. This chapter concludes by reviewing case studies of Waste management.

Chapter Three

Research methodology

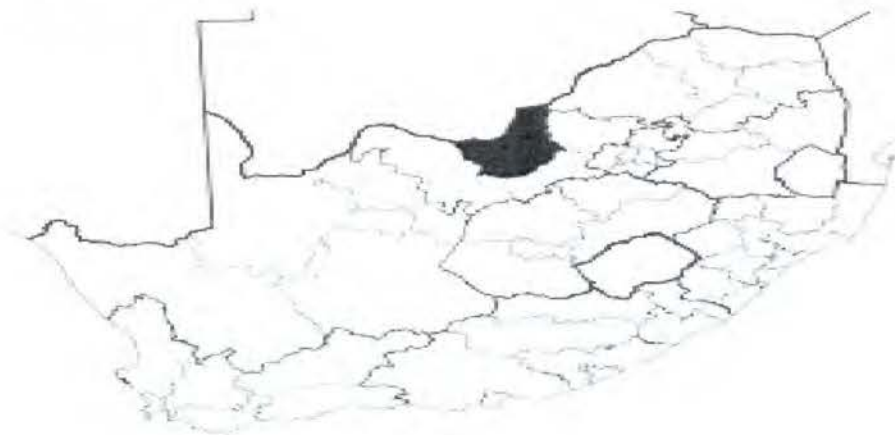
1. Introduction

This chapter describes the process and methods by which the study was executed. It is subdivided into sections such as area of the study, population of study, sampling procedure and sample size, data collection, measurement of variables and data analysis.

2. Area of the study

Ngaka Modiri Molema District municipality is in the provincial capital of the North West Province. The area is known as the Ngaka Modiri Molema District Municipality (NMMDM); it is situated in the North West Province and is situated 25 kilometres south of Botswana. It is a Category B municipality established in terms of section 12 of the municipal structures (Ngaka Modiri Molema District Municipality, 2011-2012).

The total area of NMMDM is approximately 31039 km², which is divided into 28 Wards consisting of 102 villages and suburbs. The population of the municipality is estimated at 290 288 people. Approximately 75% of the area is rural (Mafikeng local Municipality, 2012). Section 84 of the Municipal Structures Act (1998) regulates the functions and powers of Districts and Local Municipalities.



3. Population of the study

The population of the study is Waste Management employees and community members of Unit 12 Mmabatho area. There are 171 Waste Management employees (Mafikeng local Municipality, 2012), and a sample of 60 employees were randomly selected. The total population size of residents of Unit 12 is 2128; with 978 males and 1150 females (Department of Statistics South Africa, Census 2011) and 60 community members were randomly selected.

4. Sampling procedure & sampling size

According to the Mafikeng local municipality (2011), there are 171 employees, a sample random technique was used to select sixty (60) from each group of employees.

5. Data collection

Data was collected using a structured questionnaire made up of three sections, namely: personal characteristics, constraints and attitude of employees and community members. The section on personal characteristics of the community elicited information on variables such as gender, age, educational level, type of job, residential area, years of living in the area, present work situation and present membership within the community. The scale on constraints that are faced by the community consists of 27 items anchored on Yes, No, Very Severe, Severe and Not Severe. While the scale on attitude consists of 21 items anchored on 5 point Likert type scale of Strongly Agree (5), Agree (4), Undecided (3), disagree (2) and Strongly Disagree (1).

The sections on personal characteristics of Employees elicited information on gender, age group, educational qualification and type of job. The scale on constraints faced by employees consisted of 28 items anchored on Yes, No, Very Severe, Severe and Not Severe, while the scale on attitude consisted of 21 items anchored on 5 point Likert type scale of Strongly Agree (5), Agree (4), Undecided (3), disagree (2) and Strongly Disagree (1).

6. Data analysis

Data collected was sorted coded and subjected to analysis using a computer aided programme SPSS was used to present the results. Frequency count and percentages were used to describe data. T-test statistics, Regression analysis and Chi-square were used to compare constraints and attitude of community members and employees.

Chapter Four

1. Introduction

This chapter presents the results of the analysis of the study and is organised into two sections namely; personal characteristics described by frequency distribution, percentages, mean, and standard deviations. The second section covers the inferential analysis of the data using t- test and regression analysis.

2. Findings on personal characteristics of employees

From Figure 1, the result on gender shows that 90% of employees are males and about 10% are females. Males are dominant over females. Age distribution shows that 55% of employees are between 31 -40 years, it is wide belief that at this age, one has acquired more educational qualification and work experience, whereas 23% of employees are between 41 -50 years and their work experience is at an advanced stage and there is a need to transfer the skill to new entrants on the waste management market. From the study, it was found that the majority, 68% of employees acquired educational qualifications below Grade 11, the municipality has to introduce Adult Basic Education and Training (ABET) to its employees as the Government has a goal of educating all citizens by 2020. This finding is similar to Bhola (1997) that adult education should become inherently a lifelong learning. The results further show that 11% of employees have acquired Matric/ Grade 12 certificate. From the study, it was also revealed that 60% of employees have skills towards their job or training provided for their performance, while 40% are unskilled towards their daily tasks.

a. Personal characteristics of employees

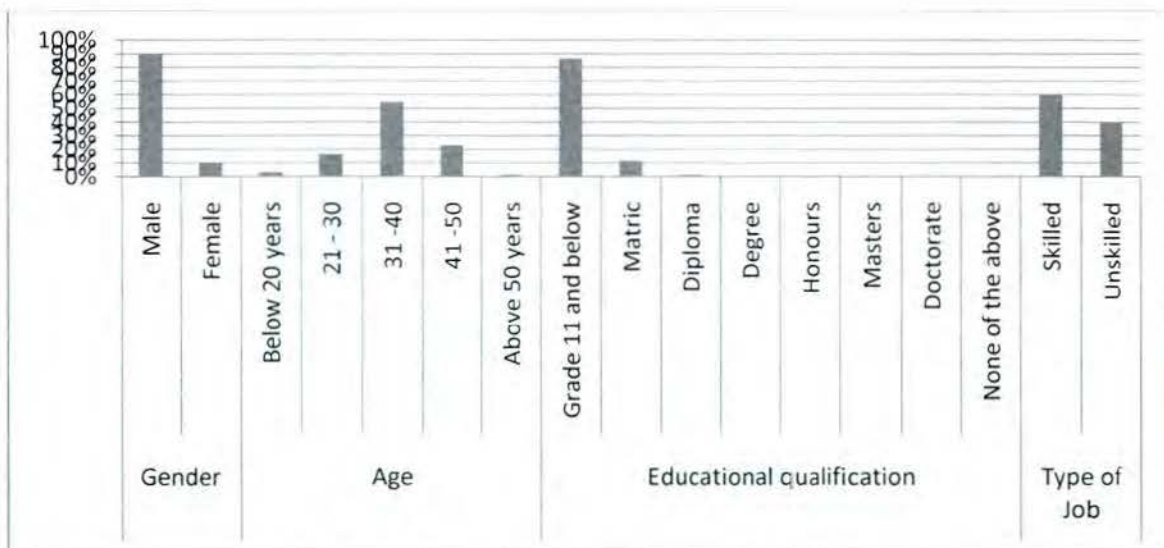


Figure 1: Personal Characteristics of employees

3. Findings on personal characteristics of community members

Figure 2 represents personal characteristics of community members; the results on gender distribution reveal that 50% are males and 50% females. Both genders are equal. Results from the study reveal that in terms of most dominate age within the community are between 20- 30 years (27%). An individual is regarded as a youth between the ages 18 to 35 years. At this age, that is when youth start to develop their careers, some are new job entrants after completing their first degrees, and some are still studying or looking for jobs. The result further shows 23% of community members are between 31-40 years. Twenty seven percent of community members have qualification that are below grade 11, maybe due to lack of interest in schooling and government has implemented free schooling to all public schools and has a lot to do in education as the community is losing interest in it. Policy document on Adult Basic Education and Training emphasised in the Bill of Rights in the Constitution of the Republic of South Africa (1996) enshrines the right of citizen “to a basic education”, including Adult Basic Education, and to further education which the state through reasonable measures must make progressively available and accessible. The White Paper on Education (1995) clarifies that the right to Basic education applies to all persons that is to all children, youth and adults (Department of Education). Twenty five percent of community members have at least obtained Matric/ Grade 12 certificate as it is required for employment or tertiary education requirement. The results further indicate that 83% of community members are skilled towards their job and result further shows that 60% are staying in urban areas and 30% of community members have more than 15 – 20 years residing in the area. Thirty percent are unemployed, still searching for a job while 45% of the community are youth.

b. Personal Characteristics of community members

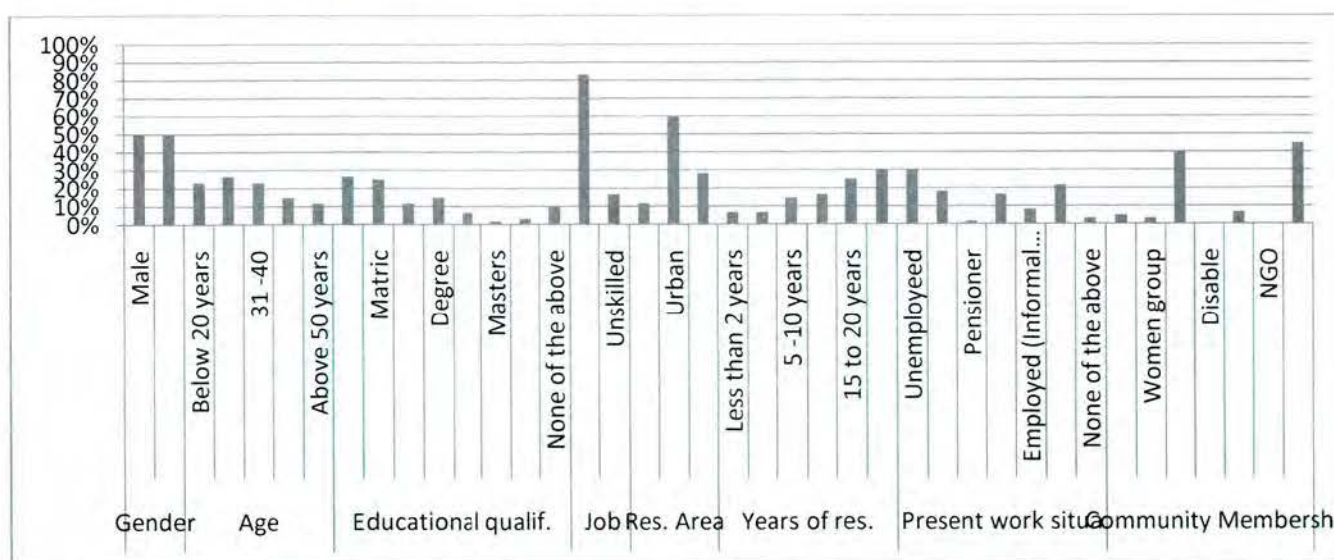


Figure 2: Distribution of Personal characteristics of community members

4. Findings on constraints faced by employees towards waste management service delivery

Table 1 shows the distribution of 29 constraints faced by employees towards service delivery. The scale is made of 29 items covering internal and external environmental facts that affect employees. Employees indicated their response ranging from Yes, No, Very severe, Severe and Not severe. The items on the internal and external environment scale should at least be 50% satisfactory. Table 1 indicates that least 85% of employees agree if a waste management record is kept, it will assist the municipality on how many tons are collected on daily basis from household, industrial areas, how many tonnes are disposed, and how many tonnes are exported to generate income for the municipality. It was discovered that 78% of employees indicated that record keeping is severe, and one of the reasons is that record keeping is implemented in terms of rule and regulations of record management.

Sixty six percent of employees revealed that budget allocation is insufficient, waste management unit needs are not addressed with the insufficient budget and budget plays an important role in the organisation it assists the organisation in achieving its goals and objectives. Its purpose is to help in planning work effectively, in allocating resources and in controlling and monitoring resource utilisation during the budget period. These findings are similar to the findings of Godfrey et al. (2013) on main barriers of implementing good waste management practice including insufficient funding for waste management and result in lack of resources (including equipment and personnel). Ninety percent of employees indicated yes; the time schedule for waste collection is in place, it is a vital tool on internal control measures and time management plays an important role as it provides information on the movement of employees in the organisation. Ninety five percent of employees revealed that it is true that a time schedule for street sweepers is in place, to assist on information of who is on duty or who is not. The study further revealed that 81% of employees indicated that there is no shortage of truck drivers and that shortage is not yet identified or the organisational structure of waste management on drivers is well fed.

Employees indicated that 78% agree on lack of capacitated workers on waste management, maybe due to the fact that they are never sent for training to enhance their skills or they are not capacitated on their field of work and also cannot classify waste. Eighty two percent of employees indicated that there is lack of waste collection strategies which affect the overall performance of the waste management function, while 87% of employees indicated that there is proper landfill sites, there are risks associated with the disposal of waste to landfills. Fifty seven percent of employees indicated that lack of proper routes may deprive waste collectors to perform their daily tasks. Ninety two percent of employees indicated that there is poor policy implementation at Ngaka Modiri Molema District

municipality maybe due to implementation procedures not properly followed or due to the fact that management of the municipality did not implement waste policies accurately or are not reviewed. These findings are almost similar to the findings of Akinboade and Mokwena (2013) that government should ensure that all allegations of corruptions and maladministration be speedily and transparently dealt with, without fear or favour.

Ninety eight percent of employees show that there is poor administration on waste management, maybe due to the fact that work review is never done. Ninety percent of employees indicated that lack of working quality tools may hamper their daily performance. Sixty percent of employees revealed that there is no lack of Health inspectors (Waste) maybe there is no disease outbreak caused by waste. Ninety three percent employees expressed their concern on lack of skills transfer from the one who has expertise towards waste management. Ninety two percent of employees revealed that there is lack of salary administration in their fields, salary administration plays an important role on waste management employees and if is not reviewed on a yearly basis, it will cause moral decay. These findings are similar to Agunwamba's (1998) findings on stimulation of the interest of workers through the provision of adequate financial remunerations and proper incentives. This will attract the needed manpower as well as reduce labour mobility from waste management sector to other areas of the private sector.

Ninety seven percent of employees indicated that there is lack of waste collection vehicles. Services are affordable to customers (70%); this shows that every class in community members can afford water, waste collection, sewerage, rates and taxes of the municipality. Majority of employees expressed that there is lack of security for street sweepers while cleaning during the day and night on the streets and has indicated the highest response and this poses danger to all employees because street lights are not properly working in the morning and during winter and we are living in uncertain world, where darkness brings all fears for men and women. Poor internal control measures (93%), Poor recruitment of waste personnel (90%), maybe in terms of performance, they do not understand what is expected of them (employees). No proper institutional setup for solid waste management services (93%), while 90% of employees' response on Poor cooperation by the public who litter waste anywhere in the field and streets and waste bins are allocated on the streets and public education can also play a major role in assisting the municipality on waste reduction.

Eighty seven percent of employees revealed that public campaigns on waste management are effective to communities maybe due to reduction on waste or littering on streets. Fifty three percent of employees indicated that National municipality on waste regulation/ law or policies are not followed maybe due to the Waste Act objectives such as waste prevention, minimisation, recycling and recovery. These findings are similar to Agunwamba (1998) on the development of integrated policies on waste minimisation, reuse, recycling, and disposal. One of the essential aspect of these policies is

the framework for adequate provision of waste collection, transportation and disposal facilities. No policy in place for waste management (78%).

Fifty three percent of employees revealed that there are standardised policies for vehicle and other equipments maybe internal control measures on vehicles are in place. Ninety percent of employees indicated poor implementation of goals and objectives of the municipality may affect the whole idea that needs to be implemented or consultants needed for guidance and monitoring process will assist the municipality in analysing progress and plan of waste management for the future. Findings of the study are similar to that of Nahman & Godfrey (2010) on the development of capacity at all government (for administration, monitoring and enforcement of instruments and of illegal dumping and billing of services to enable recovery). Poor engineering of waste management models (83%). Lack of rehabilitation on existing site (83%).

1.1 Constraints faced by employees towards waste management service delivery

No	Constraints	Yes Frequency (%)	No Frequency (%)	Very severe Frequency (%)	Severe Frequency (%)	Not severe Frequency (%)
1	Waste management record keeping	51(85)	9(15)	2(3.3)	47(78.3)	11(18.3)
2	Limited budget on Waste management	20(33.3)	40(66.7)	15(25)	19(31.7)	9(15)
3	Time schedule for waste collection in place	54(90)	6(10)	20(33.3)	17(28.3)	5(8.3)
4	Time schedule for street sweepers	57(95)	3(5)	15(25)	19(31.7)	6(10)
5	In short of truck drivers	11(18.3)	49(81.7)	15(25)	19(31.7)	6(10)
6	Lack of capacitated workers on solid waste management	47(78.3)	13(21.7)	18(30)	18(30)	5(8.3)
7	Lack of waste collection strategies (new ideas)	49(81.7)	11(18.3)	19(31.7)	18(30)	5(8.3)
8	Lack of proper landfill sites	7(11.7)	52(86.7)	20(33.3)	18(30)	4(6.7)
9	Lack of proper routes	34(56.7)	26(43.3)	21(35)	15(25)	5(8.3)
10	Poor policy implementation	55(91.7)	5(8.3)	16(26.7)	19(31.7)	6(10)

11	Poor administration on waste management (lack of service delivery)	59(98.3)	1(1.7)	20(33.3)	17(28.3)	4(6.7)
12	Lack of quality working tools	54(90)	6(10)	17(28.3)	19(31.7)	5(8.3)
13	Lack of Health inspectors (Waste)	24(40)	36(60)	20(33.3)	18(30)	20(3.3)
14	Lack of skills transfer	56(93.3)	4(6.7)	15(25)	18(30)	7(11.7)
15	Lack of salary administration or adjustments	55(91.7)	5(8.3)	19(31.7)	17(28.3)	4(6.7)
16	Lack of waste collection vehicles	58(96.7)	2(3.3)	19(31.7)	19(31.7)	2(3.3)
17	Services are affordable to costumers	42(70)	18(30)	21(35)	15(25)	5(8.3)
18	Lack of security for street sweepers	60(100)	0(0)	15(25)	21(35)	5(8.3)
19	Poor recruitment of waste management personnel	54(90)	6(10)	17(28.3)	18(30)	6(10)
20	Poor internal control measures	56(93.3)	4(6.7)	14(23.3)	23(38.3)	4(6.7)
21	No proper institutional setup for solid waste management service	33(55)	27(45)	17(28.3)	18(30)	5(8.3)
22	Poor cooperation by the public	54(90)	6(10)	15(25)	21(35)	5(8.3)
23	Public campaign on waste management is effective	52(86.7)	8(13.3)	18(30)	17(28.3)	6(10)
24	Is National municipality waste regulation/ law or policy followed?	32(53.3)	27(45)	16(26.7)	13(21.7)	11(18.3)
25	Is there any policy in place for waste management?	13(21.7)	47(78.3)	19(31.7)	16(26.7)	6(10)
26	Standardised policies for vehicle and other equipment	32(53.3)	28(46.7)	17(28.3)	13(21.7)	11(18.3)

27	Poor implementation of goals and objectives of the municipality	54(90)	6(10)	19(31.7)	8(13.3)	13(21.7)
28	Poor reengineering of waste management models	50(83.3)	10(16.7)	12(20)	15(25)	12(20)
29	Lack of Rehabilitation on existing dumpsite	50(83.3)	10(16.7)	13(21.7)	13(21.7)	14(23.3)

Table 1: Constraints faced by employees towards service delivery

5. Findings on constraints faced by community members towards waste management service delivery

Table 2 shows constraints faced by community members towards waste management service delivery scale and the index should at least be 50% to be satisfactory. The table indicates that 80% of community members have knowledge on waste management, which maybe knowledge on recycling, reducing, and recycling of waste. The results further reflect that 55% of service delivery is not satisfactory maybe due to the fact that satisfactory level of community members is not met by municipal employees. These findings are similar to the findings of Akinboade and Mokwena (2013) and it is important for the South African government to carry out urgent interventions aimed at the efficient and effective functioning and service delivery of municipalities, and improving socio-economic conditions of communities. Seventy percent of community members' results indicated that services are affordable maybe they are on a middle class economic scale. Tariffs set by the municipality affordable (63%).

Fifty seven percent of community members revealed that there is no council meeting maybe due to the non availability of a councillor. Waste collectors are reliable on time/ day (68%). Seventy five percent of community members agreed that there is Health inspectors (Waste) maybe there are no disease outbreaks due to waste management. Community members revealed that there is lack of waste collection trucks (62%) may be due on the scheduled day they fail to show up or waste is not properly collected. Fifty seven percent of community members indicated that lack of proper routes may deprive waste collectors from performing their daily tasks and may lead to mishaps.

In this study, it was found that 67% of community members revealed that there is poor waste collection maybe because community members do not put waste in available waste containers. Sixty two percent of community members indicated that poor planning on time schedule may be due to lack of supervision on waste management unit. The results further indicated that 78% of community members revealed that there is lack of capacitated workers towards their field of work may be the municipality did not capacitate employees or develop its employees in their respective fields. While

87% of community members indicated that there is no proper landfill site and there are risks associated with the disposal of waste to landfills.

Sixty seven percent of community members indicated that there is mishandling of waste management by municipal workers and this may result in the municipality encountering problems on visible waste to be scatted on the streets, may lead to environmental pollution, water pollution, harm animals and can also pose a threat to human health. These results also revealed 90% Poor cooperation by the public causes litter to be scatted on the fields and streets and waste bins are allocated/ available on the street. Seventy percent of community members revealed that there is poor public education on waste management maybe because of unmanageable waste from households. This is similar to the findings of Nahman & Godfrey (2010) that education and awareness (waste management must be seen as priority among business and communities, to encourage waste minimisation and recycling and to enable acceptance of instruments).The results also reveal that community members are not well informed about waste management and maybe public education can enlighten community members on how to compose waste.

Seventy five percent of community members revealed that there is lack of working tools may be because employees tend to misplace working tools or unless the municipality draws up policy of assets and also add control measures and procedures to recover lost tools. Seventy percent of community members revealed that Poor supervision of waste management personnel may be due to unclean streets and towns. Queries on waste management are attended by the municipality as requested by community members (82%). Seventy two percent of community members indicated that there is limited information about waste management to the community may be mass media campaigns could play a major role in advancing the knowledge of the community on waste management. Waste collectors are always not on time (58%).

These findings revealed that 68% of community members have no information on how to reduce, recycle, reuse. The community need more educational campaigns on waste and peer education has worked in the past and is an effective tool and works effectively as a low cost awareness raising technique and income can also be generated from recycling. These findings are almost similar to the findings of Hahman and Godfrey (2010) on infrastructure for extension of basic waste services, improvement in existing services and to enhance the convenience of recycling (e.g. drop-off centres, possibly of kerbside pickup, etc). Seventy seven percent revealed that there is no defined integrity and staff rule, maybe what the municipality has to do is in house induction to waste management staff. Seventy three percent of community members revealed no proper evaluation of waste management is done, maybe there is no feedback given to community members. Seventy percent of community members revealed there is inadequate service coverage (some people are not provided services) maybe some community members encounter problems with services provided by the municipality.

The results show that 78% of complains by community members in ward meetings are not met maybe due to political rivalry or disagreements that arise more often in meetings or the meetings do not have an agenda. Sixty two percent of community members revealed that waste collectors are not cooperative, maybe because they are not returning correct dustbins to correct location. Sixty two percent of community members revealed that service quality is not met.

1.2 Constraints faced by community members towards waste management service delivery

Items	Constraints	Yes	No	Very severe	Severe	Not severe
1	Any knowledge on waste management	48(80)	12(20)	20(33.3)	24(40)	8(13.3)
2	Service delivery is satisfactory	27(45)	33(55)	21(35)	19(31.7)	11(18.3)
3	Are the municipal services affordable?	49(70)	11(18.3)	15(25)	18(30)	20(33.3)
4	Are the tariffs set by the municipality affordable?	38(63.3)	22(36.7)	18(30)	19(31.7)	15(25)
5	No council/ ward meetings	34(56.7)	26(43.3)	21(35)	17(28.3)	18(30)
6	Reliable waste collection time/ day	41(68.3)	19(31.7)	25(41.7)	15(25)	16(26.7)
7	Lack of health inspectors (waste)	45(75.0)	15(25.0)	32(53.3)	14(23.3)	10(16.7)
8	Lack of waste collection trucks	37(61.7)	23(38.3)	21(35)	16(26.7)	18(30)
9	Lack of proper routes	41(68.3)	16(26.7)	23(38.3)	18(30)	13(21.7)
10	Poor waste collection	40(66.7)	17(28.3)	18(30)	20(33.3)	18(30)
11	Poor planning of time schedule	37(61.7)	19(31.7)	19(31.7)	17(28.3)	18(30)
12	Lack of capacitated workers on solid waste management	44(73.3)	14(23.3)	19(31.7)	24(40.0)	12(20)
13	Lack of proper landfill sites	46(76.7)	13(21.7)	23(38.3)	17(28.3)	15(25)
14	Mishandling of waste by municipal workers	40(66.7)	19(31.7)	22(36.7)	17(28.3)	15(25)
15	Poor cooperation by the community	36(60)	22(36.7)	14(23.3)	23(38.3)	4(6.7)
16	Poor Public education	42(70)	17(28.3)	29(48.3)	17(28.3)	10(16.7)
17	Lack of working tools	45(75)	14(23.3)	26(43.3)	13(21.7)	17(28.3)
18	Poor supervision of waste personnel	42(70)	18(30)	28(46.7)	21(35)	6(10)

19	Queries on waste management attended by the municipality	49(81.7)	11(18.3)	27(45)	19(31.7)	6(10)
20	Limited information on waste management	43(71.7)	17(28.3)	22(36.7)	19(31.7)	11(18.3)
21	Are waste collectors always on time?	25(41.7)	35(58.3)	29(48.3)	17(28.3)	10(16.7)
22	No information on how to reduce, recycle, reuse	41(68.3)	16(26.7)	27(45)	17(28.3)	12(20)
23	No defined integrity and staff rules	46(76.7)	10(16.7)	22(36.7)	27(45)	8(13.3)
24	No proper evaluation of waste management	44(73.3)	13(21.7)	29(48.3)	14(23.3)	10(16.7)
25	Inadequate service coverage (some people not provided services)	42(70)	15(25)	23(38.3)	18(30)	11(18.3)
26	Complains in ward meeting not met	47(78.3)	12(20)	20(33.3)	17(28.3)	15(25)
27	Are Waste collectors cooperative	23(38.3)	37(61.7)	24(40)	19(31.7)	7(11.7)
28	Service quality met	22(36.7)	37(61.7)	0(0)	0(0)	0(0)

Table 2: Distribution table of constraints faced by community members towards service delivery

6. Findings on attitude of employees towards waste management service delivery

Table 3 shows the attitudes of employees towards service delivery on waste management, with 22 items describing their attitude scale on positive (strongly agree and agree) and negative (undecided, disagree and strongly disagree). Out of 22 items, 20 items were positive and 2 items negative. The findings of the study revealed that 40% of employees are positive on agreeing on waste collection. According to the study, 55% of employee agreed that debris removal may reduce danger to community and debris removal includes the construction of rabbles, plants, shrubs, fallen trees that may block a driveway and side walk, while 28% disagreed on debris removal. Sixty three percent of employees agreed that removal of dead animals is part of their daily routine maybe due to avoiding human risk diseases as dead animals are often covered with parasites as fleas, mites or ticks and these organisms can carry and transmit diseases, mean and standard deviations revealed (3.51). The findings revealed that 72% of employees agreed grass cutting along the verge of roads is for safety and convenient for road users and also taking into account environmental and conservation considerations (stray animals on the road), mean and standard deviation on Grass cutting along the verge of the road showed (3.53).

Employees showed 72% positive reaction on solid waste management service done on domestic premises, mean and standard deviation (3.68), and 72% on solid waste management service done on office premises, mean and standard deviation (3.85). The study also revealed that 42% of employees agreed on Daily Street sweeping, while 35% of employees are negative or disagreed on Daily Street sweeping, and mean and standard deviation showed (3.8). Sixty two percent of Employees agreed on the effectiveness on removal of garden waste, mean and standard deviation (4.01). Employees agreed on 68% removal of bulk waste e.g. fridges, TV's and old cars maybe at times scavengers who recycle, collect them before municipality employees arrive with the aim of keeping the neighbourhood clean, mean and standard deviation showed (3.88). Removals of unnecessary trees (48%) are positive while 35% of employees are negative on the removal of unnecessary trees, mean and standard deviation revealed (3.26).

Thirty three percent of employees agreed on collection of bulk waste for reuse and recycling, while 53% of employees disagreed on collection of bulk waste for reuse and recycling may be because the loads are too heavy for them to carry or the truck that used does not have loads lifter, mean and standard deviation revealed (3.68). The findings of the study showed that 53% of employees agreed on separation of waste containers which may assist in recycling (e.g. papers from bottles and plastics) before sending waste to dump sites and also separation of waste bins is necessary, mean and standard deviation revealed (3.7). The findings showed that 77% of employees are positive on public education maybe public education on waste management will be effective and efficient for community not knowledgeable about waste and could play an important role in building the local environment, mean and standard deviation revealed (3.33). Waste collectors are always on time (75%), indicated a positive response.

Employees agreed that 52% of the landfill is monitored while 30% disagreed. When waste is buried, it can take 30 years to monitor the site, to ensure that waste is decomposed, mean and standard deviation revealed (3.46). The findings of the study also revealed that 35% of employees agreed on tree cutting as part of their daily duties because trees can be a threat to motorists and also can damage tarred roads while 52% disagreed on tree cutting, mean and standard deviation revealed (3.98). The findings revealed that 57% of employees agreed on separation of waste collected e.g. plastics from bottles to be done on daily basis while 23% disagreed on waste separation, standard deviations revealed (3.9). Sixty seven percent of employees agreed organising special campaigns on waste management may reduce littering on streets, also increasing waste separation and recycling, mean and standard deviation revealed (3.41). These findings are similar to those of Agunwamba (1998) on the study of the dependence of psychological and socio-cultural factors on attitude towards waste matters with a view of evolving more sustainable and effective environmental education programmes and the existing social clubs and age grades should be mobilised to achieve greater success in environmental education.

Sixty three percent of employees agreed on reduction of waste and maybe waste education could play an important role. Sixty two percent of employees agreed that recycling of waste may reduce waste on streets and needs community and municipality partnership to work together in of waste reduction, mean and standard deviation revealed (3.6). Twenty seven percent of employees agreed on reuse of waste, while 28% disagreed on reuse of waste, mean and standard deviation revealed (3.73).

1.3 Attitude of employees towards service delivery

No	Services	SA Frequency (%)	A Frequency (%)	U Frequency (%)	D Frequency (%)	SD Frequency (%)	Mean	SD
1	Waste collection	7(11.7)	24(40)	9(15)	5(8.3)	10(16.7)	1.61	1.20
2	Debris removal on roads	8(13.3)	33(55)	2(3.3)	17(28.3)	0(0)	2.96	1.55
3	Removal of dead animals	8(13.3)	38(63.3)	3(5)	9(15)	2(3.3)	3.51	1.09
4	Grass cutting along roads	8(13.3)	43(71.7)	3(5)	4(6.7)	2(3.3)	3.53	1.04
5	Solid waste management service to domestic premises	7(11.7)	43(71.7)	3(5)	5(8.3)	2(3.3)	3.68	0.99
6	Solid waste management service to office premises	8(13)	43(71.7)	5(8.3)	2(3.3)	2(3.3)	3.85	0.86
7	Daily street sweeping	8(13.3)	25(41.7)	4(6.7)	21(35)	2(3.3)	3.8	0.87
8	Removal of garden waste	10(16.7)	37(61.7)	1(1.7)	9(15)	2(3.3)	4.01	0.67
9	Removal of bulk waste e.g. fridges, TV's and old cars	7(11.7)	41(68.3)	1(1.7)	9(15)	2(3.3)	3.88	0.80
10	Removal of trees or unnecessary trees	7(11.7)	29(48.3)	2(3.3)	21(35)	1(1.7)	3.26	1.17
11	Collection of bulk waste for reuse and recycling	5(8.3)	20(33.3)	1(1.7)	32(53.3)	2(3.3)	3.68	1.12

12	Separation of waste containers	8(13.3)	32(53.3)	3(5)	1(1.7)	1(1.7)	3.7	0.97
13	Public education on waste management	8(13.3)	46(76.7)	3(5)	3(5)	0(0)	3.33	1.12
14	Are waste collectors always on time?	7(11.7)	45(75)	4(6.7)	3(5)	1(1.7)	2.9	1.16
15	Landfill monitored	8(13.3)	31(51.7)	1(1.7)	18(30)	2(3.3)	3.46	1.15
16	Tree cutters	4(6.7)	21(35)	2(3.3)	31(51.7)	1(1.7)	3.98	0.62
17	Separation of waste collected e.g. plastics from bottles	8(13.3)	34(56.7)	4(6.7)	14(23.3)	0(0)	3.9	0.72
18	Organising special campaigns on waste management	7(11.7)	40(66.7)	4(6.7)	8(13.3)	1(1.7)	3.41	1.15
19	Reduction of waste	8(13.3)	38(63.3)	4(6.7)	7(11.7)	2(3.3)	2.88	1.16
20	Recycling of waste	6(10)	37(61.7)	5(8.3)	8(13.3)	3(5)	3.6	0.99
21	Reuse of waste	14(23.3)	16(26.7)	2(3.3)	17(28.3)	10(16.7)	3.73	0.89
22	Reduce environmental impact/damage	0(0)	0(0)	0(0)	0(0)	0(0)	3.66	1.11

Table 3: Attitude of employees towards service delivery

7. Findings on attitude of community members towards waste management service delivery

Table 4 reveals the attitude of community members towards waste management service delivery. At least 17 variables are positive while 3 are negative. The study revealed that 33% of community members strongly agreed that services are cost effective; maybe they can afford the set tariff by the municipality and 20% of community members were undecided. The findings also revealed that 52% of community members strongly agreed they have a role to play in assisting the municipality to manage waste maybe by ensuring that waste is separated before being sent to the street for collection. Twenty five percent of community members showed positive attitude, while 23% showed a negative attitude on waste collection service which is above optimum level, mean and standard deviations revealed (3.98). Twenty two percent of Community members indicated a positive attitude on waste

bins returned to the correct yard, while 30% showed negative attitudes on the variable, mean and standard deviations revealed (3.01).

Thirty two percent of community members indicated positive attitudes in meetings conducted by politicians, while 22% showed negative attitudes. The study revealed that 28% of community members have lost interest in ward meetings, while mean and standard deviation revealed (3), both negative and positive attitudes are of same proportion. Thirty five percent of community members strongly agreed on improper meeting agreements and mean and standard deviation showed (3.36). Thirty three percent of community members strongly agreed on political rivalry in ward meetings may because there are no progresses in ward meetings, while 23% are negative, mean and standard deviations revealed (3.33).

Thirty one percent of Community members agreed on no waste separation containers while 23% are undecided and standard deviation revealed (3.48). The findings showed a positive attitude by community members on incorrect billing methods (32%) and mean and standard deviation revealed (3.41). Thirty seven percent of community members indicated a positive attitude on unreliable trucks, mean and standard deviations revealed (3.48). Thirty two percent of community members indicated a positive attitude on non removal of dead animal, while mean and standard deviations showed (3.43). Non removal of debris on kerbs of the road revealed (37%) positive attitude, mean and standard deviation showed (3.53). Non removal of garden waste indicated (48%), mean and standard deviation revealed (3.36). Non street sweeping indicated (38%) positive attitude, mean and standard deviation (3.43). Thirty three percent showed a positive attitude towards Non-removal of bulk waste e.g. fridges and old cars, mean and standard deviations revealed (3.43).

The study indicated a positive attitude on Non environmental initiatives, mean and standard deviation revealed (3.73). The study revealed a negative attitude by community members on non-defined integrity and staff rules (27%), means and standard deviations revealed (3.46). Twenty seven percent of community members indicated positive attitude on waste collection, mean and standard deviation revealed (3.63). The findings showed that 27% of community members agreed on availability of information to cover waste management issues while 28% showed negative attitudes.

1.4 Attitude of community members towards service delivery

Attitude	SA	A	U	D	SD	Mean	SD
Services are cost effective	20(33.3)	15(25)	12(20)	8(13.3)	3(5)	1.95	1.09
Community has a role to play in assisting the municipality on managing waste	31(51.7)	14(23.3)	4(6.7)	6(10)	4(6.7)	3.58	1.38
Waste collection service is above optimum level (satisfactory)	15(25)	10(16.7)	9(15)	14(23.3)	11(18.3)	3.98	1.37
Waste bins are correctly returned to the correct yard	9(15)	13(21.7)	18(30)	10(16.7)	9(15)	3.01	1.52
Meetings are conducted by politicians	13(21.7)	19(31.7)	11(18.3)	13(21.7)	2(3.3)	2.76	1.46
Lack of interest in ward meetings	13(21.7)	17(28.3)	17(28.3)	4(6.7)	8(13.3)	3	1.32
No proper agreements on meetings	14(23.3)	21(35)	11(18.3)	9(15)	4(6.7)	3.36	1.31
Political rivalries on ward meeting	20(33.3)	13(21.7)	7(11.7)	14(23.3)	4(6.7)	3.33	1.34
No waste separation containers	14(23.3)	19(31.7)	14(23.3)	9(15)	3(5)	3.48	1.28
Incorrect billing methods	16(26.7)	19(31.7)	9(15)	8(13.3)	7(11.7)	3.41	1.48
Unreliable trucks	22(36.7)	15(25)	6(10)	8(13.3)	8(13.3)	3.48	1.24
No removal of dead animals	19(31.7)	15(25)	6(10)	11(18.3)	7(11.7)	3.43	1.40
No removal of debris on kerbs of the road	22(36.7)	14(23.3)	4(6.7)	10(16.7)	8(13.3)	3.53	1.51
No removal of Garden waste	29(48.3)	15(25)	6(10)	5(8.3)	4(6.7)	3.36	1.59
No street sweeping	23(38.3)	17(28.3)	8(13.3)	6(10)	5(8.3)	3.43	1.59
No removal of bulk waste .e.g. fridges and old cars	19(31.7)	15(25)	8(13.3)	12(20)	5(8.3)	3.95	1.34
No environmental initiatives	20(33.3)	22(36.7)	4(6.7)	6(10)	6(10)	3.73	1.37
No defined integrity and staff rules	13(21.7)	6(10)	12(20)	16(26.7)	10(16.7)	3.46	1.41
Is waste collection satisfactory?	10(16.7)	11(18.3)	7(11.7)	16(26.7)	15(25)	3.63	1.46

Information is available to cover waste management issues	14(23.3)	16(26.7)	2(3.3)	17(28.3)	10(16.7)		2.78	1.53
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Table 4: Attitude of community members towards service delivery

8. Comparison of constraints and attitude between employees and community members

Table 5 presents results of the comparison of constraints and attitudes between employees and community members. A higher mean was recorded on the constraints of community members (104.16) and community standard deviation (18.76) and employees mean (93.05) and standard deviation (31.13) show that data is more reliable. There is a significant difference on the constraints of community members and employees ($t = 2.369$, $p < 0.05$), this may be because community members and employees do not perceive things in the same way, the community uses crowd reasoning and employees have to be accountable alone.

On attitude, the mean of the community (72.48) and standard deviation (13.93), employees mean (75.35) and standard deviation (13.43), shows that there is no significant difference between community members and employees ($t = -1.147$, $p > 0.05$), this may be due to the fact that attitude is a personal/ individual thinking or reaction because community members and employees are almost the very same individual thinking.

1.5 Independent sample test

	Variance	N	Mean	Std. Deviation	STD Error Mean	T	Df	Sig(2 tailed)
Constraints	Community	60	104.1667	18.76001	2.42	2.369	118	0.019
	Employees	60	93.05	31.13635	4.01			
Attitude	Community	60	72.4833	13.93993	1.79964	-1.147	118	0.254
	Employees	60	75.35	13.43386	1.7343			

Table 5: Independent sample test

9. Determinants of attitude towards waste management services among the employees

The result of the multiple regression analysis showing determinants among employees is presented on Table 6. The independent variables were significantly related to employees in relation to service delivery. The F value = 5.074, shows that there is a strong correlation between the independent variable and service delivery among employees. Also, R value of 0.666 while R square is 0.443, this implies that the independent variables predict 44% of the dependent variable. The significant determinants are age group ($t=2.227$), Time schedule of waste collection in place ($t=2.197$) and Time

10. Chapter summary

This chapter described the personal characteristics of municipal employees and community members with frequency distribution and percentages. Service delivery among employees and community members were rated with frequency and percentage as well as mean and standard deviation. The inferential statistics applied in the study include correlation, t- test and multiple regression analysis. These were used to establish the comparison of the constraints and attitude of employees and community members and determinants of attitude towards waste management services among employees.

Chapter Five

FINDINGS AND RECOMMENDATIONS AND CONCLUSIONS

1. Introduction

The study was designed to determine the assessment of service delivery among employees and community members. Sixty employees and community members were selected randomly from each to give a sample of 120. Data was collected using a structured questionnaire made up of personal characteristics, constraints and attitude. Data collected was coded and subjected to analysis using frequency count and percentages to describe data, while t- test statistics was used to compare constraints and attitude between employees and community members.

2. Major findings of the study

Majority of important constraints faced by employees towards service delivery showed that 85% agreed that waste management record is kept, and seventy eight percent of employees revealed that record keeping is severe. Sixty seven percent of employees revealed that budget allocation is insufficient. Ninety percent of employees agreed that time schedule for waste collection is in place. Ninety five percent of employees agreed that time schedule of street sweepers for internal control purpose is in place. Eighty two percent of employees revealed that there is no short of truck drivers. Majority of employees (78%) agreed on lack of capacitated workers towards their field of work. Eighty two percent of employees agreed on lack of waste collection strategies. Eighty seven percent of employees revealed there is proper landfill site. Fifty seven percent of employees have revealed that there is lack of proper routes.

Ninety two percent of employees indicated that there is poor policy implementation at Ngaka Modiri Molema District Municipality. Majority of employees (78%) agreed on lack of capacitated workers towards their field of work. The results show that majority of employees (90%) agreed on lack of quality working tools. Sixty percent of employees agreed on absence lack of Health inspectors (Waste). Ninety two percent of employees agreed on lack of salary administration. The results revealed that 97% of employees agreed on lack of waste collection vehicles. Many employees (70%) revealed that services are affordable to customers. Majority of employees (100%) expressed there is lack of security for street sweepers. Ninety three percent of employees agreed on poor internal control measures. Poor recruitment of waste personnel (90%). No proper institutional setup for solid waste management services (93%). Poor cooperation by the public (90%). Eighty seven percent of employees revealed that public campaigns on waste management are effective to communities. Fifty three percent of responses show that National municipality on waste regulation/ law or policies are followed. Seventy eight percent of employees revealed that there are no waste management policies.

Fifty three percent of employees agreed there are standardised policies for vehicle and other equipment. Ninety percent of employees agreed on poor implementation of goals and objectives of the municipality. Poor engineering of waste management models (83%). Employees (83%) also revealed that lack of rehabilitation on existing site.

Majority of important findings on attitude of employees towards waste management service delivery revealed that 55% of employees are positive on debris removal done. Sixty three percent of employees agreed on the removal of dead animals. Seventy two percent of employees agreed on grass cutting along the verge of roads for the safety and convenience of road users. Seventy two percent of employees agreed on solid waste management services to domestic premises and to solid waste management services to office premises are done, they share the same proportion. Sixty two percent of employees agreed removal of garden waste is effective. Sixty eight percent of employees agreed that municipal workers do removal of bulk waste e.g. fridges, TV's and old cars. Employees showed a negative attitude on collection of bulk waste for reuse and recycling.

Fifty three percent of employees agreed on Separation of waste containers as it will play a vital role in the municipality waste separation. Seventy seven percent of employees are positive on public education on waste management. Seventy five percent of employees are positive on waste collectors who are always on time. Landfill monitored (52%). Fifty two percent of employees revealed negative attitude on tree cutting. Fifty seven percent of employees showed that separation of waste collected e.g. plastics from bottles are done on a daily basis. Seventy seven percent of employees are positive on organising special campaigns on waste management. Sixty three percent of employees are positive on reduction of waste and waste education. Sixty two percent of employees are positive on recycling of waste. The results of the multiple regression analysis show significant determinants of employees age group ($t=2.227$), Time schedule of waste collection in place ($t=2.197$) and Time schedule for street sweepers ($t=2.532$), shows there is strong correlation between independent variable and age group, time schedule of waste collection in place and time schedule for street sweepers.

Findings on the personal characteristics of community members' results on gender revealed that males and females are equal 50%. Age distribution reflects the most dominant age (27%) on community members is between 20- 30 years, and 23% are those who are between 31-40 years. Twenty seven percent of community members have qualifications that are below grade 11. Twenty five percent of community members have at least obtained Matric/ Grade 12 certificate. Majority of community members (83%) are skilled towards their job. Findings of the study reveal that 60% are staying in urban area. Thirty percent of community members have lived in the area for more than 15 – 20 years. Thirty percent of community members are unemployed, still searching for a job. Forty five percent of community members are youth.

Major findings on constraints faced by community members towards service delivery. It is important to note that many items had high percentages. Eighty percent of community members have knowledge on waste management. The results reflect further that 55% of community members show that service delivery is not satisfactory. Seventy percent of community members agreed that services are affordable. Sixty three percent of community members revealed that tariffs set by the municipality are affordable by the community. The findings revealed that 57% of community members indicated that there are no council/ ward meetings. Results show that 68% of community members agreed that waste collectors are reliable on time/ day.

Seventy five percent of community members agreed there are Health inspectors (Waste), and it is very severe (53%). Sixty two percent of community members revealed that there is lack of waste collection trucks. Sixty eight percent of community members revealed that there is lack of proper routes. Sixty seven percent of community members revealed that there is poor waste collection. Poor planning of time schedule (62%). Seventy three percent of community members agreed on lack of capacitated workers towards their field of work. Lack of proper landfill site (77%). Sixty seven percent of community members agreed there is mishandling of waste management by municipal workers and this may result in the municipality encountering problems on visible waste to be scattered on the streets. The results revealed 60% of Poor cooperation by the community where they litter waste anywhere in the field and streets and waste bins are allocated on the streets. Poor public education (70%), lack of working tools (75%) and Poor supervision of waste personnel (70%).

Community members revealed that 82% of queries on waste management are attended by the municipality as requested by the community. Seventy two percent of community members agreed on limited information about waste management to the community. Fifty eight percent of community members revealed that waste collectors are always not on time. Sixty eight percent of community members have no information about reducing, recycling and reusing. Seventy seven percent of community members agreed that there are no defined integrity and staff rules which bind them to their performance. Seventy three percent of community members agreed there is no proper evaluation of waste management done. Inadequate service coverage (some people not provided services) (70%). Complaints in ward meetings are not met (78%). Waste collectors are not cooperative (62%). Service quality not met (62%).

Findings on the attitude of community members towards service delivery and the index should be at least 50%; fifty two percent of community members showed they have a role to play in assisting the municipality to manage waste.

3. Conclusion

The following conclusion can be drawn based on the findings on the objectives and hypothesis of the study. The majority of employees were males, age group between 31 -40 years and educational qualification below grade 11 compared to the community gender that is equal between males and females, age group between 20 – 30 years, educational qualification is below grade 11, many are skilled towards their work, staying in urban areas, they have been residing in the area for more between 15 – 20 years, while unemployed and majority are youth. There is a significant difference on the attitude of employees which affect their failure to service delivery, influencing factors are, age group, time schedule of waste collection and the time schedule for street sweepers.

4. Recommendations

Recommendations are made with regards to major contributors to waste management service delivery.

It is recommended that the municipality should:

- Create an environment where employees will advance their career, or introduce ABET (Adult basic education and training) for employees;
- Create financial assistance for employees who are interested in schooling;
- Invite mentors to mentor those who have lost interest in schooling;
- Create moral regeneration for employees;
- Create conducive environments for employees;
- Send employees for training (internal or external) in relation to waste management;
- Address employees' needs in terms of tools to be used;
- Ensure that employees are working in a safe environment by sending security guards with employees to the streets;
- The municipality to budget for community campaigns;
- Daily street sweeping must be supervised and reported back;
- The municipality should train employees and community members on reuse of waste;
- Reduce environmental impact by training employees and the community; and
- The municipality should train employees on other aspects that make the community unhappy such as not returning dust bins to the correct yard or the community should mark their bins by using house numbers as a reference.

It is recommended that the community should:

- Participate in ward meeting;
- Attend ABET; and
- The municipality must conduct waste management campaigns more often.

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Annexure A

Questionnaires

1. Personal characteristics of Employees

a. Gender

Male	1
Female	2

b. What is your age group?

Years	
Below 20 years	1
21-30 years	2
31-40 years	3
41- 50 years	4
Above 50 years	5

c. What is your highest educational qualification?

Grade 11 and below	1
Matric or Grade 12	2
Diploma	3
Degree	4
Honours	5
Masters	6
Doctorate	7
None of the above	8

d. Type of job

Skilled		Unskilled	
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2. Constraints faced by employees towards service delivery

Constraints	Yes	No	Very severe	Severe	Not severe
Waste management record keeping					
Limited budget on Waste management					
Time schedule for waste collection in place					
Time schedule for street sweepers					
In short of truck drivers					
Lack of capacitated workers on solid waste management					
Lack of waste collection strategies (new ideas)					
Lack of proper landfill sites					
Lack of proper routes					
Poor policy implementation					
Poor administration on waste management (lack of service delivery)					
Lack of quality working tools					
Lack of Health inspectors (Waste)					
Lack of skills transfer					
Lack of salary administration or adjustments					
Lack of waste collection vehicles					
Services are affordable to costumers					
Lack of security for street sweepers					
Poor recruitment of waste management personnel					
Poor internal control measures					
No proper institutional setup for solid waste management service					
Poor cooperation by the public					
Public campaign on waste management is effective					
Is National municipality waste regulation/ law or policy followed?					
Is there any policy in place for waste management?					
Standardised policies for vehicle and other equipment					
Poor implementation of goals and objectives of the municipality					
Poor reengineering of waste management models					

Lack of Rehabilitation of existing dumpsite					
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3. Attitude of employees towards service delivery

SA- strongly agree, A-agree, U-undecided, D- disagree, SD- strongly disagree

Services	SA	A	U	D	SD
Waste collection					
Debris removal on roads					
Removal of dead animals					
Grass cutting along roads					
Solid waste management service to domestic premises					
Solid waste management service to office premises					
Daily street sweeping					
Removal of garden waste					
Removal of bulk waste e.g. fridges, TV's and old cars					
Removal of trees or unnecessary trees					
Collection of bulk waste for reuse and recycling					
Separation of waste containers					
Public education on waste management					
Are waste collectors always in time?					
Landfill monitored					
Tree cutters					
Separation of waste collected e.g. plastics from bottles					
Organising special campaigns on waste management					
Reduction of waste					
Recycling of waste					
Reuse of waste					
Reduce environmental impact/ damage					

Annexure B

Questionnaire

1. Personal Characteristics of community members

a. Gender

Male	1
Female	2

b. What is your age group?

Years	
Below 20 years	1
21-30 years	2
31-40 years	3
41- 50 years	4
Above 50 years	5

c. What is your highest educational qualification?

Grade 11 and below	1
Matric or Grade 12	2
Diploma	3
Degree	4
Honours	5
Masters	6
Doctorate	7
None of the above	8

d. Type of job

Skilled		Unskilled	
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e. Type of area you are residing?

Rural	1
Urban	2
Semi rural	3

f. How long have you been residing in that municipal area?

Less than 2 years	1
2- 5 years	2
5-10 years	3
10 -15 years	4
15 – 20 years	5
More than 20 years	6

g. Which of the following best describes your present work situation?

Unemployed	1
Student	2
Pensioner	3
Self employed	4
Employed (Informal sector)	5
Employed (Formal Sector)	6
None of the above	7

h. Which of the following best describes your present membership in the community?

Ward committee member	1
Women group	2
Youth	3
Disable	4
Businesses	5
NGO	6
Community member	7

2. Perceived constraints towards service delivery among community members

Constraints	Yes	No	Very severe	Severe	Not severe
Any knowledge on waste management					
Service delivery is satisfactory					
Are the municipal services affordable?					
Are the tariffs set by the municipality affordable?					
No council/ ward meetings					
Reliable waste collection time/ day					
Lack of health inspectors (waste)					
Lack of waste collection trucks					
Lack of proper routes					
Poor waste collection					
Poor planning of time schedule					
Lack of capacitated workers on solid waste management					
Lack of proper landfill sites					
Mishandling of waste by municipal workers					
Poor cooperation by the community					
Poor Public education					
Lack of working tools					
Poor supervision of waste personnel					
Are Queries on waste management attended by municipality					
Limited information on waste management					
Are waste collectors always on time?					
No information on reduce, recycle and reuse					
No defined integrity and staff rules					
No proper evaluation of waste management					
Inadequate service coverage (some people not provided services)					
Complains in ward meeting not met					
Are Waste collectors are cooperative					
Service quality met					

3. Attitude by the community towards service delivery

Attitude	SA	A	U	D	SD
Services are cost effective					
Community has a role to play in assisting the municipality in managing waste					
Waste collection service is above optimum level (satisfactory)					
Waste bins are correctly returned to the correct yard					
Meetings are conducted by politicians					
Lack of interest in ward meetings					
No proper agreements on meetings					
Political rivalries in ward meeting					
No waste separation containers					
Incorrect billing methods					
Unreliable trucks					
No removal of dead animals					
No removal of debris on kerbs of the road					
No removal of Garden waste					
No street sweeping					
No removal of bulk waste .e.g. fridges and old cars					
No environmental initiatives					
No defined integrity and staff rules					
Is waste collection satisfactory?					
Information is available to cover waste management issues					