Cape Peninsula University of Technology

Effect of social norms and attitudes towards domestic waste in a selected formal settlement in the Western Cape, South Africa

By

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DECLARATION

I, **Tahulela Aifani Confidence,** declare that the contents of this dissertation/thesis represent my own unaided work, and that the dissertation/thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

Signed **Date**

ABSTRACT

The communities of Khayelitsha face problems with regard to managing waste. Increase on the generation of solid waste in the households by the members of the community; far exceed the townships' ability and capability for safe disposal. Littering in the township is also a persistent problem, despite various clean–up and anti-litter promotional campaigns and programs introduced by local government, private organizations and other community interest groups. The persistent problem of litter and mismanagement of solid waste in the household should be addressed. The rationale and assumption underpinning this study was that waste management problems are related to social norms and attitude of the people of Khayelitsha. To investigate this phenomenon, the study adopted a qualitative paradigm. 300 heads of household residing in Khayelitsha for more than 5 years were surveyed, and door to door interview questions were conducted in 2016 June. Data from the questionnaire were analysed using Thematic and coding analysis. NVivo software was used to generate frequency tables. The responses to most interview questions were consistent for all categories of respondents and did not vary according to respondents' background, such as gender, location household size or education. The study showed that social norms and attitudes towards waste minimisation in Khayelitsha are related to the entire waste management operation, and householders in Khayelitsha think similarly. To improve waste management in Khayelitsha the following are recommended:

- Government and business need to consider incentives to minimise waste;
- Government needs to improve waste management service facilities and build recycling centre which are accessible to the community; and
- Government and non-governmental organizations and community members should consider awareness, education and training programs on waste wise management.

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DEDICATION

To God Almighty my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this project, He has given me wisdom and understanding to complete this project and on His wings only have I soared.

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GLOSSARY

For the purpose of this study, the following concepts were explained and defined:

Attitude- is a predisposition or a tendency to respond positively or negatively towards a certain idea, object, person, or situation. Attitude influences an individual's choice of action, and responses to challenges, incentives, and rewards (Sidiquea, Lupib, and Joshi, 2010).

Behaviour- The way in which one acts or conducts oneself, especially towards others (Sidiquea, Lupib, and Joshi, 2010).

Social Norms – defined as moral standards attributed to a social group or collective where action is motivated by public approval, there are norms defining appropriate behaviour for every social group (Sidiquea, Lupib, and Joshi, 2010). For example, students, neighbours and patients in a hospital are all aware of the norms governing behaviour. And as the individual moves from one group to another, their behaviour changes accordingly, Norms provide order in society.

Waste: Waste refers to any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, by the holder of the substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered. City of Cape Town (CoCT), (2011) is of the argument that waste is anything which is no longer useful in one's life.

Waste management- is defined as the process in which waste is controlled or the way in which solid waste is dealt with, the waste management process which will be covered in this study will include generation of waste, handling, storing, collection and transportation, minimisation and final disposal of waste (DEA, 2011:15).

Waste generation- it refers to the production of waste (City of Cape Town, 2009:5).

Waste handling- Waste handling covers the action of dealing with waste such as sweeping, tidying and cleaning after generation and prior to final disposal (Corral-Verdugo, 2003:266-269)

Waste storage- Waste storage refers to the action of accumulation and piling rubbish before disposal (City of Cape Town, 2009:5).

Waste collection and transportation- Waste collection and transportation are the actions of removing waste from the household, by the department's waste collection service or private collection with the intention of final disposal (Banga, 2011:28).

Waste final disposal- Waste disposal refers to the final placement of treated waste; this refers to the methods used by households to get rid of their wastes such as burning, burying, landfill and others (Banga, 2011:28).

Waste minimisation – According to Samsudina, and Dona, (2013) waste minimisation is the prevention of waste production and/or its reduction. Waste minimisation covers the methods used to avoid or reduce waste such as recycling, re-use, reducing waste production and recovering energy from waste materials.

ABBREVIATIONS

CoCT-City of Cape Town

EMP-Environmental Management Plan

DEAT- Department of Environmental Affairs and Tourism

DESA- Department of economic and social affairs

MSW- Municipal solid waste

NEMA -National Environment Management Act

NWMS- National Waste Strategy

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1. Introduction

Several countries in Africa are facing challenges regarding waste management by their local municipalities. Some of the problems faced in Africa as described by Morrison and Munro (1999:232), Poswa (2000:36) and Bhagwandin (2013:16-18) include: Insufficient government priority and political support for action; lack of finance; no long-term planning or business planning; poor landfill siting, planning and management, lack of skilled personnel; lack of awareness of the problems caused by poor waste management; physical limitation to establishment of landfill sited; poor handling of clinical and hospital waste; insufficient recycling and re-use, including limited re-use of organic waste.

Failure to address these problems cause an increase in environmental and health problems for the cities and cause serious consequences for economic development on tourism and export of agriculture. The situation described above also applies to Khayelitsha located in the Western Cape, South Africa where this study was conducted. Nkala (2012:1) confirms that poorly managed solid waste poses a risk to human health and the environment. Therefore, uncontrolled dumping and improper waste handling causes a variety of problems, which includes polluting water, attracting insects and rodents, and increased flooding due to blocked drainage canals or gullies. The issue of managing waste is important in Khayelitsha, because the population is dense and increasing, thus, more waste material is being produced. Further, many people are changing their life style and now they have become more dependent on packaged goods and tinned foodstuffs (Farrelly and Tucker, 2014:7). CoCT (2011:10) is of the opinion that 90% of the materials used in the manufacture of those goods become waste almost immediately.

Currently waste which is generated on a day to day basis far exceed the municipality's ability and capability for safe disposal. In Khayelitsha, households have containers and refusal bins at their disposal which the contractors come and empty once in a week, but still waste mismanagement is a huge problem. Regardless of having containers and refusal bins at their disposal, households tend to utilise refusal bins for their own personal errands than to store waste. For example, household members use refuse bins to go to the market to sell their goods. Various departments and non-governmental organizations have introduced measures to alleviate the problem, but only with short-term success (Bhagwandin, 2013:19-20).

1.2. Research problem

O'Connell (2011:107) indicated that nations, municipalities, and communities seek to reduce their waste on landfills by increasing recycling, composting, and at-source reduction. Recycling and waste reduction programs are introduced to reduce the amount of waste entering landfills, such as source reduction, curbside recycling, and drop-off recycling programs. Zhang and Wen (2014) and O'Connell (2011:108-109) stated that recycling program's success largely depends on household participation in sorting activities and waste management awareness programs. Poswa (2000:9-13) argues that despite the positive attitude displayed by municipalities to encourage waste minimisation, littering in households and throughout the townships is still a persistent problem. Hence, municipalities are still faced with problems relating to solid waste management. In Khayelitsha, households generate most of the solid waste and they face serious problems with regard to disposal and littering from households. Throughout the Khayelitsha Township, despite various campaigns such as Waste-Wise and contractors, who collect waste once, a week waste mismanagement is still a serious problem. CoCT (2011:10) state that Waste Wise is a programme facilitated by the City of Cape Town that seeks to foster a behaviour change and to encourage a culture of environmental responsibility amongst all residence in a joint effort to reduce waste to landfill and empower citizens to minimise waste and littering. There are various awareness programs facilitated throughout the township to empower community members and educate them about waste management.

Whilst, there is continued persistence of a littering problem in Khayelitsha and waste mismanagement, the assumption is that waste management problem is related to the social norms and attitudes of people of Khayelitsha. An orientation of the geographic research area was conducted to ascertain the actual context and the extent of the problem of waste in Khayelitsha. Observation supported by informal open-ended interviews with selected members of the community confirmed the assumption that waste management problem is related to the social norms and attitudes of people of Khayelitsha. The research study focused on refuse collection and attempt to assess the perception of the residents with regards to their social norms and attitude, towards the current state of the service provided by the municipality, as it relates to initiatives to reduce municipal solid waste.

1.3. Purpose and aims of the study

The purpose of the study was to assess the impact of social norms and attitude of the people of Khayelitsha towards waste minimisation initiatives in Khayelitsha households and to obtain explanations as to why waste minimisation initiatives are underperforming. The aims of the study to achieve the purpose of the study were:

- To understand the impact of the social norms and attitude towards waste minimisation initiatives;

- To establish the main causes of solid waste mismanagement in Khayelitsha;
- To ascertain whether the householders attitude to recycling are a contributing factor to poor recycling performance;
- To investigate social norms and structural influences towards waste minimisation; and
- To identify any changes in waste minimisation practice which households would like to implement.

1.4. Research question

Arising from the above discussion the following research question was formulated:

What are the social norms and attitudes of Khayelitsha communities towards domestic waste minimisation initiatives?

1.5. Geographic location

The study was conducted in Khayelitsha, Cape Town. Refer to the map shown at (Map1.1). Khayelitsha is located within the jurisdiction of the Cape Metropolitan Municipality with 28 sub-places which are: Bungan TR Section, Victoria Mxenge, Trevor Vilakazi, Monwabisi, Khayelitsha T3-V3, Tembani, Village V1 North, Silver Town, Solomon Mahlangu, RR Section, Khayelitsha T2- V2b, Village V1 South, Bongweni, Khayelitsha T3-V5, Ikwezi Park, Washington Square ,Village V2 North, Khayelitsha T3-V4, Griffiths Mxenge, Khayelitsha T3-V2, Harare/Holomisa, Khayelitsha SP, Ekuphumleni, Village V4 North, Graceland, Village V3 North, Mandela Park, and Town 3 (Statistics South Africa, 2013:1).

Figure 1.1 Map of Khayelitsha

Source: Statistics South Africa (2011:1)

Khayelitsha has an estimated population of 391 749, and the number of households is 118 809 with the average household size of 3.30. The average erf size is 200xm2 for a formal dwelling and the average size for an informal dwelling is 40m2 (CoCT, 2011). Khayelitsha is located thirty (30) kilometers south east of the central business district of the City of Cape Town. Khayelitsha was built in the1980's by the apartheid regime as a segregated residential area for workers and to accommodate the growing migration from rural areas. Khayelitsha quickly became a compact sight of informal housing, high rate of unemployment and social unrest. Service delivery in Khayelitsha is underperforming, in terms of the provision of water and electricity; refuse collection and other basic municipal amenities. An effort has been made after apartheid to upgrade and extend services to the area by the municipal council that has managed Khayelitsha, but these efforts have proven to be slow. Refuse collection is one such service (Qotole, Xali, and Barchiesi, 2001:7-16).

1.5.1. Demographic structure and social systems

The population of Khayelitsha is 391 749 Strategic Development Information (SDI) and Geographic Information System (GIS) (2011:2) of whom 99% are black African and 45% of households live in formal dwellings and 65% live in informal dwellings. Khayelitsha has been the most densely populated area in Cape Town. Tables 1.1, 1.2 and 1.3 reflect the population by race and gender and population by age group and median age, respectively.

Table 1.1 Population by gender

Khayelitsha Population	Male		Female		Total	
	Num	**%**	**Num**	**%**	**Num**	**%**
Black Africans	188 336	48.1%	198022	50.5%	386 385	98.6%
Colored	1 024	0.3%	1 291	0.3%	2 315	0.6%
Asian	164	0.0%	107	0.0%	271	0.1%
White	168	0.0%	159	0.0%	327	0.1%
Other	1869	0.5%	608	0.2%	2 477	0.6%
Total	**191561**	**48.9%**	**200 187**	**51.1%**	**391748**	**100.0%**

Source: SDI and GIS (2011:3)

Table 1.2: Population by age group and median age 2001 census

Age group	2001 median age in %
0-14	29.6
15-34	45.6
35-54	21.1
55-64	2.6
65+	1.1

Source: Statistics SA (2003:11)

Table 1.3 Population by age group and median age 2011 census

Age group	2011 median age in %
0-4	11.9
5-14	16.2
15-24	21.4
25-64	48.8
65+	1.6

Source: SDI and GIS (2011:3)

Increase of population has a significant impact on waste production, age structures and social roles influence the management of waste and roles shared in families. The large percentage of young people indicates a continued population increase, which also has implication for waste production and disposal in the future and this will be explored in the study.

1.6. Theoretical approaches adopted for the study

Various approaches to waste management study have been adopted such as economic, engineering, scientific, environmental and behavioural approaches. The studies from an economic approach focus on finding methods to address waste management and minimisation, cost and benefit analysis Mutavchi (2012) studied solid waste management based on the cost benefit analysis using the Waste Management Efficient Decision Model (WAMED) to provide frameworks, to evaluate the economic efficiency of waste management and assessing the cost effectiveness to manage solid waste.

The engineering approach seeks the practical solution for waste management such as designing a landfill site, installation of incinerators and many other waste management practices. The approach was adopted by researchers such as Bullard, Wager, and Wagner (1998), in a study conducted on the disposal of low level radioactive waste, so as to examine the design of a disposal facility.

Environmental approaches investigate the effect on the environment (land, waste and atmosphere) from a waste management practice prospective. The approach has been adopted by many studies such as the study carried out in Kenya by Selin (2013), which focused on the awareness of risk and environmentally significant behaviour, to investigate the effect waste has on the environment.

The scientific approach investigates the aspect of the health impact of chemicals arising from waste materials. This approach was employed by Abor (2007) in the study on medical waste at Tygerberg Hospital, Western Cape, South Africa.

Each approach addresses a particular question, is governed by particular models and theoretical concepts and implements particular methodologies. The research study however differs, because waste was studied from the collective behavioural science perspective, with the view that the way, in which people deal with waste, is related to their social norms and attitudes. Collective behaviour refers to the behaviour of more individuals who are acting together or collectively (Smelser, 1963 and Granovetter, 1978). In collective behaviour, a large group is said to convey a sense of transcending power which serve to support, influence or suppress individual participants in his/her activity (Smelser, 1963:6). The study used the collective behavioural approaches and methods of sociological theory, to understand and uncover the social norms and attitude of the people of Khayelitsha, with respect to managing their household wastes. This approach assisted in explaining the behaviour as influenced by the transcending powers of the community.

1.7 Chapter presentation

The study is presented in 7 chapters. The nature of the study and theoretical approaches and perspectives employed by this study in an attempt to understand and uncover social norms and attitudes of the Khayelitsha community towards managing waste is presented in Chapter one. A critical review of previous studies on aspects of waste management that has been carried out in both less developed and developed countries is presented in chapter two. Chapter three provides statutory, legislative and regulative framework for waste management. Chapter four provides the methodological approach employed in the study for data collection, in particular the construction and administration of a household survey. Chapter five and six presents the results and findings of the study and chapter seven provides the discussion of these results and finings. The conclusion and recommendations are presented in chapter eight.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

Sustainable solid waste management in households is a huge problem, because of rapid changes in environmental behaviour and changes in individual social norms and attitudes. Legislation have been implemented to deal with this dilemma however the problem of managing household waste still continues. In order to resolve the challenges, a change in public participation and behaviour can minimise the volume of waste and increase recycling.

The literature examined the concept of waste; provided a description of waste in less developing and developed countries; as well as the various methods of managing waste in both less developing and developed countries. The literature also presented South African waste trends and the status of waste management in Khayelitsha, the selected formal settlement for this study is also presented. The current attitude and behaviour towards waste management is provided as to sketch the context for this study. Finally the frameworks that guide the management of waste in South Africa will be examined.

2.2. Concept of waste

Different countries and different organisations define waste in different ways, according to their own purpose. The Britain Waste Disposal Authority (1976:186) describes waste as:

> *Any substance which constitutes a scrap material or an effluent or other unwanted surplus substance, arising from the application of any process, and any substance or article which requires to be disposed of as being broken, worn out, contaminated or otherwise spoiled.*

The United Nations Organization according to Morrison, Wray, Dever and Dunstan (2000:46) define waste as any matter prescribed to be waste under national legislation, any material listed as waste in suitable schedules and in general, any reject material that is no longer useful and which is to be disposed. The Australian waste database define waste as materials that currently have negative value to their owner that is the generator which incurs a cost in managing waste (Wray, 2000:5).

The Western Cape Municipal Regulations, by law (2015:14) for the Western Cape province define waste as any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, by the holder of the substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered (National Environmental Management (NEM), 2014).

A common theme prevails in these definitions, whereby waste is neither wanted, or does not have value to the owner and therefore has to be disposed in one way or another.

According to the NEM document (2014:15) waste is produced in different forms such as solid, liquid or gas. Liquid and gas waste is discharged into the atmosphere. Solid waste is given more attention all over the world. Solid waste is described as all waste (garbage, rubbish, trash, refuse), which arises from human and animal activities that are discarded as useless or unwanted (Annecke and Swilling, 2008). The source and composition of waste is divided into five categories, according to the City of Cape Town (2009:6-7) namely:

- Domestic household waste;
- Commercial solid waste;
- Building and demolition waste;
- Industrial waste; and
- Agricultural waste

The research study will focus only on domestic household solid waste. According to the Department of Environmental Affairs and Tourism (DEAT) (2000:8-10) domestic waste is waste generated from residential sites and it includes plastic bags, plastic packaging, paper and cardboard packaging, food waste, tin cans, aluminium and others (including bulky items, consumer electronics, white goods, batteries and tyres).

2.3. Waste in developed countries

According to the United States Environment Protection Agency (2015:1) the United States of America alone produces a large amount of solid waste, which is around 220 million tons each year. The United Kingdom according to the Department for Environment Food and Rural Affairs (2015:1-2) produces 200 million tons of municipal waste every year. This is equivalent to half a ton of rubbish per person. Furthermore, Japan's annual household waste is around 50 million tons. Japan is facing many challenges when it comes to illegal dumping of waste. However, the Japanese government has been promoting the Reduction, Reuse, Recycling and Recovery (4R) awareness for some time (Stephen, 2014:1280). Refsgaard and Magnussen (2008:225) state that regardless of the high volume of waste generated in developed countries, waste is still manageable in developed countries and individuals participate in the recycling activities.

Bai and Sutanto (2002) also Li, Fong and Chan (2015:34-40) indicated that Singapore's last land fill site on the mainland was closed in 1999 due to lack of suitable land. A new landfill was established at an offshore site, located south of the country. However, the new landfill site is located twenty three kilometres from Singapore and it appeared to be an expensive option as

waste needed to be transported by barges to the sites. In order to increase and maximize the life span for the landfill in Singapore waste minimisation is imperative. In 1992 the Minister of Environment in Singapore established the waste minimisation department, whose responsibility included the development and promotion of nationwide established minimisation initiatives and programmes. In 1999 more than 40% of waste generated was recovered for the purpose of recycling. The successful recycling initiatives depended on the attitude of the inhabitants of Singapore and awareness programs on recycling. The inhabitants of Singapore participated fully in the awareness programme, as they worked together and made it a norm that recycling is important and for everyone (Neo, 2010: 872).

Refsgaard and Magnussen (2008:226) state that developed countries have advanced technology in landfill and have thus progressed. However, regardless of such advanced technology the risk posed to human health and environment continue to raise on-going concerns. Residents often oppose the establishment of new landfill sites due to fear of endangering public safety and environmental health. Refsgaard and Magnussen (2008:228) further indicated that it is important for every country to have legislation and policies in place that will support the sustainable and integrated waste management. According to Abrashkin (2015: 26) the regulation framework will improve human health, environmental protection against waste generated, legal disposal and long term sustainability, thus ensuring a better quality of life for future generations. According to Afroz, Masud, Alchtar, and Duasa (2013:332) In South Korea and Taiwan, waste generation has decreased due to the initiation in 1995 of a unit pricing system, which involved a waste fee based on the volumes generated; communities are fully involved in the initiatives. The two countries sort their waste accordingly, which makes it easier for a waste collector to collect waste from households. South Korea currently recycles 103%, and landfill decreased by 31%

Farrelly and Tucker (2014:15) state that managing waste in developed countries has become a huge problem as more and more waste is generated every day. Sthiannopkao and Wong (2013:1147-1153) argue that although more waste is generated in developed countries every day, their modern technology has taken a good care of handling, storage, collection, transportation and disposal of waste. In the United State of America (USA), Toronto in Canada, Liverpool in England, Australia and New Zealand waste/ garbage is secured in bags and placed in large steel or plastic containers properly fitted with lids. The containers are lifted mechanically by compactor trucks or loading mobile packers (Bhagwandin, 2013:102). Farrelly and Tucker (2014:11-26) confirm that New Zealanders, for example, appear to be aware that better environment care is needed because researchers have indicated that in New Zealand the recycling is the most adopted and reported form of behaviour followed by re-use, compositing and green purchase.

Poswa (2000:11) argues that landfill is a controlled site for disposal of refuse on land without creating nuisances or hazards to public health and safety. Nkala (2012:16) further confirms that landfilling is the common method, which is used today, in many countries. In the United Kingdom they have approximately 4 000 licensed landfill sites (Read, Philips and Robinson, 1998:5-9) which accommodate 29 million tons of yearly household waste and 45 million tons from other sources. In USA they place most of their solid waste in landfills. New York alone disposes 26 million pounds of solid waste in a landfill daily. In developed countries most landfills sites are kept to the standards required for safe disposal of non-hazardous solid waste (Nkala, 2012:16-20). Farrelly, and Tucker (2014:15) claim that the success of the modern technology for waste minimisation, depends on the level of the participation by the community for example in the UK and New Zealand Householders participate in recycling programs and awareness of waste minimisation programs such as, Waste and Resources Action Programme (WRAP) in the UK and Zero Waste Education in New Zealand.

2.4. Waste in less developed countries

In less developed countries for instance, Ghana generates approximately 750 to 800 tons per day (Puopiel, 2010:21-22), which is about 273 750 to 292 99 tons per year. It is evident that countries with high per capital income generate and dispose huge amount of waste compared to middle and low-income countries. For instance according to Moh, and Manaf (2014: 50-61) in Malaysia more than 91% of waste generation has increased in the past 10 years, 28 500 tonnes (95%) of municipal solid waste has been disposed directly to landfill. In Brazil in 2011, Brazil's population generated 61.9 million tons of solid waste. The growth in solid waste is not the only issue, but also the disposition of this waste is also a concern, as 42 % of the total solid waste collected in 2011 was inappropriately disposed (De Sousa Jabbour, Jabbour, Sarkis, and Govindan, 2014:7-9). Many communities in less developed countries, lack knowledge and understanding of solid waste management, a study as shown in a study undertaken in Vietnam's capital city, Hanoi which revealed that communities or individuals are neither ignorant or they lack understanding, as illegal dumping is a norm in the Hanoi community (Nguyena, Zhua, Le. 2015:170).

According to Sthiannopkao and Wong (2013:1147-11493) developing countries are experiencing a problem of managing their solid waste because of insufficient facilities, ineffective policy implementation, poor waste awareness, poor public participation and commitment to waste minimisation and lack of technology. In Mumbai, India, the solid waste is not stored prior to collection (Mwanthi, and Nyabola, 1997). According to Bhagwandin (2013:16) the methods used for disposal in developing countries include old methods of burning, burying and dumping waste, and are still used to date in many underdeveloped and

developing countries. Selin (2013:25) argues that, in African countries, such as Zimbabwe, Kenya, Malawi, Somalia, Ghana and Nigeria, solid waste collection and disposal is a serious problem faced by municipal government. Many of these countries have illegal dumping, open dumping and burning which is problematic to the health of individuals and the environment (Puopiel, 2010:15-19). Dumping on the street and drains is a common practice and this attitude has led to widespread pollution of the cities, also dumping on unoccupied land is a common practice in developing countries, such as South Africa specifically in the Western Cape Khayelitsha.

In Ghana according to Annecke, and Swilling (2012:33) more than 100 dumps are scattered throughout the city, and the most dangerous part is that the co-disposal of hospital waste, industrial waste and household waste at this dumping site causes serious health, such as for example, skin and blood infections resulting from direct contact with waste, and infected wounds. Furthermore different diseases result from the bites of animals that feed on the waste. Environment problems arise when, solid waste is dumped in drainage channels and gutters, and it blocks the flow of the sewerage. In developing countries landfill sites are below the required standards and cannot cope with the huge flow of solid wastes (Afroz, and Masud, 2011:15). In Pakistan this is evident according to Gonzalez-torre, Adenso-Diaza, and Tuiz-Torres (2003:130-132) which is facing both financial and logistical problems in designing and operating safe landfill sites to cope with huge volume of waste.

According to Guerrero, Mass, and Hogland (2013:221-223) the huge challenges faced by developing countries with their waste management is the lack of individual participation towards waste minimisation programs. According to the Selin (2013) the Malaysia ministries of housing and local government have initiated major efforts to recycling but it is unfortunate that limited recycling activities were adopted, due to poor awareness and public participation among the public in Malaysia.

2.5. Review of previous waste management studies

Extensive literature relating to waste management can be grouped into economic, engineering, scientific, environmental and the behavioural dimension according to the approach adopted by researchers on this subject. The study employs the behavioural approach, and the literature reviewed, will concentrate on the literature pertaining to waste management activities undertaken from this perspective. A review of the literature has revealed that the behaviourist approach to waste management is the least researched, especially with regard to the social norms and attitudes. Behavioural studies can largely be divided into four types, focusing on:

- Recycling;
- Waste reduction;

- Littering; and
- Awareness of solid waste management and knowledge;

2.5.1. Recycling

Lohri, Camenzind, and Zurbrügg (2013:545), state that recycling can be defined as a series of activities, by which materials that are no longer useful are collected, sorted, processed, and converted into raw materials and is used in the production of new products. Afroz and Masud (2011:802) are of the opinion that the success of any recycling programme depends on people participation in sorting activities. According to Egmond and Bruel (2007:15) individual behaviour occurs when he or she is aware of the problem or a need that gives an initial reason or incentive to follow a particular course of action. Tonglet, Phillips, and Bates (2004:29) are of the opinion that awareness is normally raised by external factors such as experience of peers. Behavioural change can also be influenced by awareness-raising campaigns and educational programmes.

The most researched type from a behaviour perspective is recycling which is concerned with salvaging reusable waste. A number of studies have been conducted over the years to encourage people to recycle. Manzini and Vezzoli (2003:852854) indicated that strategies and techniques for improving recycling, such as antecedent strategies, antecedent strategies that have been applied in relation to litter control, including written and verbal prompts, community involvement, the effects of litter, and trash/waste can design, are some of the strategies for recycling.

Prompting

The prompting technique includes written or verbal communication which targets individuals to encourage positive behaviour. Flyers, brochures, and newspaper advertisements that advocate recycling and explain how to use existing recycling services are examples of written prompts. Verbal prompts deliver the same information but are given in face-to-face contact. Geller (1980:368) studied the effectiveness of using handbill prompting techniques against no prompts in Blacksburg Virginia, to increase the purchase of returnable soft drink containers from the local grocery store. Six treatment phases were implemented rotating in daily, 2hour periods across four weeks. Students distributed handbill prompting some customers entering the store to encourage them to purchase returnable soft bottle drinks, and publicly registering their bottle purchases, while some were not given the handbills. The results showed that returnable purchases increased by 25% in the group given handbill prompting. However, the prompting effectiveness was short-lived.

A further study was conducted by Spaccarelli, Zolik, and Janson (1990:49) to compare the effectiveness of written plus verbal prompts with written prompts only, in increasing

participation on curbside recycling. A multiple baseline design was utilised. The combination of written and verbal prompts was shown to increase participation by 3% above baseline level during a 7 to 16 week post-intervention period. Those receiving only written prompts showed little change from baseline. Unfortunately, the study did not include a group receiving only verbal prompts. The most effective prompting strategy appeared to have been the block leader approach that involved face-to-face, verbal prompting from resident to other residents (Spaccarelli et al, 1990:51). The study conducted by Burn (1991:611-629) requested residents on selected blocks to act as leaders and tell their neighbours about a curbside recycling program during a 12 week period. The residents contacted by block leaders recycled more often than the groups who received an information brochure and monthly prompts about the program. The reason why this approach produced a greater effect could be that verbal prompting gave the recipient of the prompt the perception that recycling was normative behaviour, for residents of the neighbourhood, and to not recycle would place the recipient's home at risk of an outcast social position.

Commitment

Commitment involves dedication to a cause which involves obtaining promises or agreements from people to recycle for a specified period. An experiment study conducted found that commitment strategy increases recycling (Porter, Leeming, and Dwyer, 1995:8). The simple act of promising to recycle influenced subsequent behaviour. For example, an experiment conducted by Bryce, Day, and Olney (1997:27-52) compared the minimal and strong commitment with informational prompts only, for increasing household recycling of newspapers, and found that both committed groups participate more often than the prompted group, found that household in curbside recycling increased by written commitment than written prompts.

The simple act of promising to recycle influenced subsequent behaviour and the strongest effects were found when the promise to recycle was in the form of signed statement and referred to the individual behaviour. Beside the behavioural intervention that has produced various techniques; other methods have been investigated to determine how to increase recycling mostly in developed countries. In some countries, like the Singapore school based educational programs have developed curricula for addressing general environmental problems (Neo, 2010: 876). Another area of research concerned with recycling was to identify individual differences between recyclers and non-recyclers. This study highlighted the need to explore personal and household characteristics influencing underpinning behaviour-attitudes, and social norms.

2.5.2. Waste reduction

Another approach to investigate behaviour change was to examine the reduction of input in the waste system. Margai (1997) conducted a study that investigated the changes in waste reduction behaviour in East Harlem, New York, before and after an educational outreach program, so as to increase participatory behaviour. The challenge was to identify the barriers in program participation and to devise a strategy that would encourage greater involvement among all sectors of the population. In this study focus group sessions were conducted followed by interviews conducted by nine people who were trained to conduct door-to-door interviews. Workshops and outreach programs and interviews were carried out during the intervention period. In addition meetings and seminars on waste prevention and recycling were held. The findings were that there were improvements in the total daily recyclables collected. Also, among the public household units there was a manifestation of positive environment behaviour. The results also showed that the age of the residents, apartment ownership, and household size were among the important predictors of behaviour. The research concluded that these findings provided important information for developing and maintaining successful recovery and reduction programs in communities with similar demographic profiles. The research examined behaviours regarding the reduction of waste and how to improve such behaviour.

2.5.3. Littering

One of the biggest problems in our society is litter, which has been the focus of much behavioural research. In term of the prevailing environmental awareness, litter not only remains primarily a blemish, it is a threat to the environment. Litter is defined as misplaced waste material according to De Kort, McCalley, and Midden (2008:20). Various ways and strategies have been employed to examine ways to reduce the litter problem however, the problem continues. Various research projects on litter reduction have been conducted over the years to find solutions and strategies that would be the most effective for a targeted population. Although the research does not give a permanent solution to eliminate the behaviour towards littering, there are many simple, creative and cost effective strategies that have proven to be effective (De Kort, et al, 2008).

2.5.4. Knowledge and awareness

A very few studies have been conducted on the public knowledge, attitudes, social norms and awareness of solid waste management. Studies carried out in the city of Nairobi assessed the factors contributing to improper solid waste management in Nairobi (Mwanthi, Nyabola, and Tenambergen, 1997). Knowledge, attitudes and practice with respect to solid waste management were also assessed. The research found that the problem of solid waste management has reached a crisis level in the city of Nairobi. The tool used for data collection

was the standardised questionnaire that was administered by eight trained interviewers who interviewed participants face-to-face at the participants' homes.

A public awareness survey was conducted in Morogoro municipality in Tanzania (Chengula, Lucas, and Mzula, 2015: 150) to assess the knowledge and level of public waste management awareness of the Morogoro municipality. Data was collected by observation and interviewing the respondents and also the completing of the questionnaires.

2.6. South African waste trends

South Africa is a middle-income country that counts among Africa's fastest growing and strongest economies (Department of Economics and Social Affairs, 2011). Various types of production activities exist in South Africa which is mainly generated by products, which are usually discarded but often turn out to be sources of serious environmental hazard (Song, and Zeng, 2015). The increase of population growth and rapid urbanization and industrialization, increase the volume of waste generated in the country (DEAT, 2000:2-7 and DESA, 2011). In South Africa, some outcomes of increasing waste generation are beginning to be observed in various forms, which affect the environment and human health in many ways. These include:

- Waste from human and industrial activities is aesthetically unattractive and impacts negatively on tourism by creating plight on South Africa's beautiful landscape:
- There is an increasing record of waste polluting air, soil, rivers and precious groundwater;
- Waste creates health hazards to humans, particularly in areas where large amounts are dumped and not cleaned up, example, in informal settlements,
- Waste fills up landfill sites, which are becoming more difficult and costly to establish or reclaim. In the main cities such as Cape Town, Durban, Johannesburg and Tshwane, efforts are clearly exerted and there are solid institutional frameworks in place to facilitate waste collection, transportation and management, including sorting, recycling, proper disposal (DEAT, 2000). However, there is clear evidence of massive accumulation of waste especially in poorer settlements around city outskirts and in townships, where there is need for attention to support waste management (Poswa, 200012-13).

Waste management in South Africa is a dynamic process, in terms of both collection and disposal. The responsibility of the local authority is to ensure that service is provided to its communities (South Africa, 2011). Town and city engineers therefore, need to be vigilant in identifying changes, and be innovative in making the service affordable, while meeting the standards expected by these communities, because it is through technology where most initiatives can be developed and initiated, therefore it is important to consider individual norms in doing so (National Waste Minimisation Strategy, 2011:15).

South Africa has a huge challenge in the generation of funds required for the successful solid waste management as well as waste minimisation initiatives. Solid waste collection and disposal in landfill sites takes priority over opportunities to promote and encourage waste recycling, approximately 70% of household receive a waste service from local municipality. According to the modelled waste data, South Africa generated 59 million tonnes of general waste 2012 (Godfrey, Scott, Difford, and Trois, 2012:2-17). An estimated 5.9 million tonnes (10%) of general waste was recycled with the remaining 53.5 million tonnes of general waste being landfilled. Municipal, commercial, and industrial waste generated within municipalities represents a total of 20,157,335 tonnes when recycled (Godfrey et al, 2012).

South Africa generated approximately 108 million tonnes of waste in 2011, of which 98 million was disposed of at landfill. 59 million tonnes of general waste, 1 million tonnes are hazardous waste and the remaining 48 million tonnes is unclassified waste, which still needs to be classified based on analytical data. In the order of 10% of all waste generated in South Africa was recycled in 2011. Waste management in South Africa is thus still heavily reliant on landfilling as a waste management option, with 90.1% of waste generated being disposed of to landfill in 2013 (Guerrero, et al, 2013 and Godfrey, et al, 2012).

2.7. Waste management status in Khayelitsha

Khayelitsha consist of 28 suburbs. The level of service delivery standards is deprived commencing with the access to water, sanitation and waste refusal collection (CoCT, 2015:35). In terms of the waste minimisation strategy, in 2006 the City of Tape town introduced a new improved waste collection service in both formal and informal areas of Khayelitsha. Formal areas in Khayelitsha were serviced by 85 litre bag/bin systems since its establishment. However, the standard of service was not up to the same level of the service provided to other areas of Cape Town. To improve the waste removal service in Khayelitsha the City of Cape Town established a new service standard concerning waste collection. Eighty-five litre bins have now been replaced by 240 litre bins, as the new bins have a larger capacity. The city appointed contractors for both formal and informal settlements and such contractors are appointed within and from the Khayelitsha area. The contract has since been rolled out on a month-to-month basis. Currently, the contractor collects waste in Khayelitsha once a week, in case where the wheelie-bins are absent residents utilise shipping containers for their waste (City of Cape Town, 2015).

2.8. Social norms attitudes, behaviour and waste management

The question of how to examine individual attitudes and behaviour and, more significantly, how to introduce meaningful policies, is mainly problematic in the realm of waste management. The

problem is the results of the prevailing norms and different behaviours the community displays towards solid waste management.

Sidiquea, Lupib, and Joshi (2010:243-245) indicated that the success of a waste initiative programme is dependent on household participation and sorting activities which are essential behaviours. Banga (2011:28-30) further explains, that household participation, is when the community are willing to participate in waste programmes such as waste minimisation meetings and education. Zeng, Niu, Zhou and Zhao (2016:169) state that the community will have an understanding of waste separation or sorting because it is during their participation that they are educated about separation or sorting of waste.

Sidique, Lupi, and Joshi (2010) indicate that recycling behaviour is influenced by the cost of recycling, convenience of available recycling infrastructure and programmes, the extent of the environment related awareness and knowledge, attitudes towards recycling, social norms and external pressures, and household socioeconomic status. Understanding behaviours and attitude is the way forward to facilitate waste minimisation, but there are important barriers for the households and general public such as, lack of knowledge, motivation, and influence via social norms (Tonglet et al, 2004:29). Individuals dump their waste in water streams, sewage, and in an open space because of lack of knowledge or motivation and influence from community members who dump their waste in an open space or in water streams and sewages. Illegal dumping lack of knowledge, motivation and influence via social norms are barriers for waste minimisation (Kingston, 2013, Sidiquea et al, 2010, and Guerrero et al, 2013).

Social norms are individual beliefs about popular and accepted behaviour in a specific situation. Beliefs have a powerful influence on behaviour, as many seem not to realize it. Social norms present what is typically done in a social group, such as common actions actually performed. Strategies that use social comparisons to incite change of private behaviours with public consequences were developed upon the social comparison theory proposed by Leon Festinger. It says that individuals self-evaluate an action or a thought based on comparison to others (Festinger, 1954: 138).

2.9. Conclusion

A distinct difference is evident between the approaches conducted on solid waste management in developed countries when compared to less developed countries. Developed countries have effective and efficient waste management systems and the necessary finance

to support waste management initiatives such as kerbside recycling. Research carried out in developed countries primarily analyses factors that influence the extent of waste recycling. These studies have focused on the influence of policies, economic incentives, peoples' attitudes and socio- economic factors. Below are the examples of such investigation.

The study by Tonglet et al (2004) investigated the factors that influence waste minimisation behaviour. It was established that concern from the environment and community positively influence the extent of recycling. Carlson (2001) examined the use of financial incentives to provoke a behavioural change towards waste separation. Also Gonzalez-Torre et al (2003) analysed what impact a waste collection system has on recycling habits. In general these examples demonstrate type of research conducted on waste management in developed countries.

Research in less developed countries focus instead on distinct circumstances that influence municipal solid waste management, Such studies include the identification of waste management problems and their root causes, analyses of waste compositions and the extent of service delivery. In general the research conducted on solid waste management concentrate on the contribution of informal recycling initiatives and that inhabit sustainable waste recycling in developing countries (Zeng, 2016:18).

The literature review indicates that behavioural studies of waste management have dealt primarily with recycling and focused on ways that would encourage people to recycle. Studies on reducing litter took the same focus as those of recycling by investigating ways and means to reduce litter. Very few studies were conducted on social norms and attitudes to manage waste. Most studies were conducted in developed countries with very few studies in developing countries. Limited any studies have been conducted in South Africa and no study has been conducted to understand the effect of people's social norms and attitudes towards household waste management in a complete process that is from waste generation to final disposal.

CHAPTER THREE: STATUTORY AND REGULATORY FRAMEWORK FOR WASTE MANAGEMENT

3.1. Introduction

Laws, policies and regulations are important instruments for waste management. Waste management legislation is formulated in accordance with the types of waste or waste management practices at international, national and regional level. In South Africa there are many laws and regulations guiding the management of solid waste. The following legislation is regarded as the most relevant for solid waste management.

3.2. Statutory framework

3.2.1. The Constitution of the Republic of South Africa, 1996

The Constitution, Act 1996 was fundamental in providing the legal premise for the enactment of statutory legislation and policies which regulate the environment. The Constitution, 1996 defines the human right to environmental protection and an environment that is not harmful to human health or well-being. The Bill of Rights contained in the Constitution 1996, section 24 (a) states that “everyone has the right to an environment that is not harmful to their health or well-being”. This right includes the need to have a protected environment “for the benefit of present and future generations, through reasonable legislative and other measures, including prevention and sustainable measures”. Government has the duty to ensure that these rights are upheld. The notion of a healthy environment is further entrenched by Sections 152(1) (b) and (d) of the Constitution, 1996 which assigns a variety of functions to the local government sphere. Following legislation has been promulgated to manage and govern waste in South Africa and is explained under separate headings.

3.2.2. The National Environmental Management Act, (No.107 of 1998) as amended;

The amended National Environment Management Act 107 of 1998, (NEMA) and the Waste Act 59 of 2008 (South Africa, 2011), addresses institutional arrangements and planning fragmentation in the waste management sector. NEMA advocates for integrated waste management planning by all spheres of government and role-players in the sector. Most importantly, it provides national regulating norms and standards, licensing and control of waste management activities and, lastly, compliance and enforcement of the national waste information system.

NEMA provides a framework for the general environmental law and co-operative governance in South Africa and this came into effect in January 1999. NEMA (1998) focuses on the principles of sustainable development in addressing environmental aspects such as resource conservation, pollution control, and land use.

Chapter 3 of NEMA states that national and provincial government departments, who are responsible for waste management, must develop and implement an Environmental Management Plan (EMP).

Chapter 7 of NEMA enforces a duty of care with regards to pollution and environmental degradation. Any person responsible for causing significant pollution or degradation of the environment must take the necessary steps to eliminate or minimise the pollution and is liable for remediation where relevant.

NEMA specifically refers to the promotion of waste avoidance and minimisation. Government departments have the responsibility to encourage waste recycling, separation at source and safe disposal of unavoidable waste.

3.2.3. The National Environmental Management: Air Quality Act (No.39 of 2004)

The National Environmental Management: Air Quality Act (No.39 of 2004), (NEMAQA) Act came into effect on 1 April 2010 and simultaneously the Atmospheric Pollution Prevention Act (No.45 of 1965) (APPA) was repealed. The objective of NEMAQA (2004) is to protect the environment by providing reasonable protection and enhancement of the quality of air in the republic; Prevention of air pollution and ecological degradation, and securing ecologically sustainable development while promoting justifiable economic and social development.

NEMAQA also gives effect to section 24(b) of the Constitution, 1996 by enhancing the quality of ambient air for the sake of securing an environment that is not harmful to the health and well-being of people of South Africa.

3.2.4. The National Environmental Management: Waste Act (No.59 of 2008)

The National Environmental Management: Waste Act (No.59 of 2008), also referred to as the Waste Act (No.59 of 2008) came into effect on the 1 July 2009, and established a legal framework for the regulation of waste management activities. Some of the objectives of the Waste Act (No.59 of 2008) include minimising the consumption of natural resources, avoiding and minimising the generation of waste, reducing, re-using, and recycling and recovery waste, treatment and safe disposal of waste as a last resort, prevention of pollution and ecological degradation and promotion of effective delivery of waste service.

The National Waste Management Strategy (NWMS) as amended by the Department of Environmental Affairs (2011) is an integrated waste management framework, whose approach is ‘from cradle to grave’, or from waste generation to waste disposal. Waste management processes need to adopt the principles of reducing waste at source, recycling and reuse, treatment and handling, with disposal of waste seen only as a last resort. The White Paper on Integrated Pollution and Waste Management (DEAT, 2000) deals holistically with pollution and waste management, including pollution prevention and minimisation at source.

Government's commitment to waste management strategies is traced back to the Polokwane Declaration (DEAT, 2001), whose vision is "to reduce waste generation and disposal by 50% and 25% respectively by 2012 and develop a plan for zero waste by 2022". Government tabled the Draft Municipal Waste Sector Plan "to develop, implement and maintain an integrated waste management system which contributes to practical, sustainable waste service delivery and a measurable improvement in the quality of life of all people and environment" (DEA, 2011). The sector plan is to focus more on shifting the pattern, from dumping waste in landfills to minimising and reducing waste, and to providing domestic collection services to all. The National Domestic Waste Collection Standards (South Africa, 2011) aims to correct the imbalances in the waste collection services, with the objectives of ensuring that the level of service is equal across the country, extending waste collection to areas where no services were before, and encouraging separation of waste at source, recycling initiatives and community involvement. CoCT (2011) is of the opinion that the strategy has improved in some area of South Africa but yet the other parts are still struggling to adapt to the strategy.

3.2.5. Local government: Municipal Structure Act (No.117 of 1998)

Local government municipal structures act 1998 (No. 117 of 1998) regulates establishment of municipalities and assigns the relevant structures and functions, which facilitates the generation of integrated development plans (IDPs) for municipalities, including waste management strategies and decisions regarding waste disposal operations. Local government municipal systems act (No. 32 of 2000) provides a framework for local government functions and planning with the intention to rectify the inequality in service delivery.

3.2.6. Local government: Municipal System Act (No. 32 of 2000)

The Local Government Municipal Systems Act (No. 32, 2000) was endorsed to enable the municipalities to move towards social and economic upliftment of local communities, and enable every community member to have access to equal service delivery, which is financial and environmentally sustainable.

3.2.7. City of Cape Town Integrated Waste Management (IWM) policy

The IWM Policy enables the Council to ensure and regulate the provision of waste management services, either through internal or departmental services, or external service mechanisms, where Council has to act as a Service Authority in terms of the MSA, to execute its Constitutional mandate (Song and Zeng, 2015)

CHAPTER FOUR: RESEARCH DESIGN AND METHODOLOGY

4.1. Introduction

This chapter explains the research methodology, design and the methods adopted for this research study. The population and sample are also described as well as the instruments utilised to collect the data, including methods implemented to maintain validity and reliability of the instrument in question.

4.2. Research designs

The research philosophy employed for this study is the Interpretivism research philosophy. Interpretivisim is a philosophy that relies heavily on naturalistic methods (interviewing and observation and analysis of existing texts) that ensures an adequate dialogue between the researcher and those with whom they interact in order to collaboratively construct a meaningful reality to enable an in-depth understanding of phenomenon (Walker, 1985:27). The study attempts to investigate social norms and attitudes towards waste minimisation initiatives in Khayelitsha. The research adopts the perspective that the waste management depends on people's attitudes, beliefs and norms. Greater understanding of this phenomenon can be gained by interpreting the beliefs, attitudes and norms of the people residing in Khayelitsha.

Interpretivists are concerned with understanding and interpreting the meanings of human behaviour rather than to generalize and predict causes and effects. To understand the effect of social norms and attitudes towards solid waste management an interpretivist approach theory was adopted, so as to understand the motives, meanings, reasons and other subjective experiences which are time and context bound (Creswell, Ebersohn, Eloff, Ferreira, Ivankova, Jansen, Nieuwenhuis, Pietersen, Plano Clark and Van der westhuizen, 2008:56).

4.3. Research Methodology

Although there is more than one research methodology one can employ, this study has employed a qualitative/inductive approach. Filstead (1971:29) defines qualitative methodology as a methodology which allows the researcher to get close to the data, thereby developing the analytical, conceptual and categorical components of explanation from the data itself .Qualitative research methodology is flexible and allows the researcher to pursue new areas of interest which might come up during the study. According to Creswell et al, (2008:45) qualitative research is often associated with inductive research designs in which a range of methods are used such as interviews and focus group sessions, to collect the data and explore the problem from different perspectives. An inductive approach is known as building a theory, which is concerned with generating new theory in which the researcher can be able to start collecting data in an attempt to develop a new theory and also to gain an opportunity to explain

the phenomenon. The study adopted an inductive approach to generate a theory of waste management which is based on the human behaviour.

4.4. Population and sample

The population covered in this study includes householders who reside in the formal settlement of Khayelitsha. Khayelitsha falls within the jurisdiction of the Cape Metropolitan area of the City of Cape Town, which includes 28 suburbs and has an estimated population of 391 749 (SDI and GIS, 2011:1). The map presented in Figure 1.1 is a geographical delimitation of the study.

4.5. Pilot Survey

A pilot interview was carried out prior to the commencement of the research survey, with 30 heads of household in the Khayelitsha formal settlement. The purpose of this survey was to test the reliability of the questionnaire. The process allowed the interviewees to express their views relating to the questions. The opportunity further allowed the researcher to resolve any difficulties with the wording of the questions, the structure, and the time taken to complete the questionnaire, while also identifying any questions that might make a participant feel uncomfortable. The data collected in this interview was not included in the analysis.

4.6 Sample and sampling methods

This research study used non-probability sampling technique because the probability of getting participants is not there. Non-probability sampling technique was utilised as non- probability techniques enable the researcher to select areas where the researcher wishes to conduct the interviews to and select the participants which falls within the nature and context of the study. According to Creswell (2003:16) non-probability sampling is a technique in which units of the sample are selected on the basis of personal judgment or convenience, and the probability of any particular member of the population being chosen is unknown.

The study made use of purposive sampling because purposive sampling as Neuman (2011:240-271) indicates provides credibility to the sample when a potential sample is larger than one can administer. No-probability purposive sample was used to purposefully select participants. The researcher collected data until the point of saturation was reached. According to Creswell, and Plano Clark, (2011:15) data saturation is when the researcher is no longer gearing or seeing new information or themes when collecting data. Point of saturation was reached after interviewing 300 household participants.

4.7 Data collection methods

In-depth interviews and focus group discussion were adopted to collect the data. In-depth interviews enabled the informant to relate experiences and attitudes in their own words (Walker, 1985:29). Open-ended questions were used in the interviews.

Focus group discussions were utilised to obtain information with regard the opinions, perceptions, attitudes, beliefs, and insights (Barbour and Kitzinger, 1999:79). Focus groups provided a means of obtaining group participants' individual and unique understanding of experiences. In particular, focus groups were helpful in evaluation, research and in understanding how people regard a specific experience or event (Krueger, 1994:39). Focus group discussions were conducted with different waste collection operators, for the purpose of validating the research findings.

Open ended in-depth interview questions were administered with or to the head of households in Khayelitsha who resided in the formal settlement for 5 years or more. The open- ended questions were derived from the literature review, and certain questions were modified to suit the current study to ensure validity and reliability. Interviews provided the best opportunity for respondents to share information in a comfortable and familiar manner (Creswell, 2003:8).

4.8 Data collection process

Interview sessions were carried out with head of households in Khayelitsha; Head of households were purposefully selected in order to collect rich data that provided an insight of their lived experience in waste management. During the interview session, a field notebook and tape recorder were used to keep a record of the response given by the interviewees. The use of a variety of instruments is recommended for data validation (Stake, 1995 and Henning, Gravett and Rendsburg, 2005). The questions were semi-structured, according to the aims of the study; Interviews were carried out until the point of saturation was reach. The questions were open ended, the researcher conducted door to door interviews in three subsections in Khayelitsha namely, Litha Park, Khayelitsha and Khulani Park these allowed the participants to feel more at ease in their soundings and also to feel free to speak on the research topic, questions were mainly open-ended.

4.9 Design of questions

The questions were translated to Xhosa language since a dominate language in Khayelitsha is Xhosa, in order to ensure uniformity of meaning between the translated versions, the double build method was applied (Mouton 1996, 221-2390, the double build in method requires that one first translates the question into Xhosa then get the second person to translate it back to English, errors that occurred were corrected. Questions are attached in Appendix 1 and 2.

The first (1) part of the question was designed to establish the demographic characteristics of the respondent, namely for example gender, type of respondent if they are residing for more than 5 years in their area, or less, ownership, level of education. This section provided very important information for data analysis and interpretation, since the norms and attitudes of people of Khayelitsha may be related to their social and demographic characteristic and place of residence.

The second (2) part of the questions was designed to identify the norms and attitudes towards solid waste management at a household level. The interview question consists of 39 questions. The questions were divided into 4 sections in which each question comprises of a major waste management process:

- Littering;
- Waste storage;
- Waste disposal; and
- Waste minimisation (Re-use, Recycle, Reduce, and Recovery)

The question attempted to discover the current practices of waste management, prompted from responses to questions such as:

- In your opinion who should be responsible for handling the waste in your household?
- How often per week is waste cleared (collected and disposed) by household members?
- How is waste stored in your household before disposal?

To see the feelings and beliefs about such practices whether the practice are liked or disliked question such as the one below was asked:

- How often per week would you like waste to be cleared?

The opinion about the above practice was asked with questions such as:

- What do you think of littering in Khayelitsha?
- In your opinion how can waste storage be improved in your household?

The character of people's action (behavioural domain) towards the above practice was obtained asking questions such as:

- If you are asked to do cleaning how often will you do it?
- How will you store the waste if you are asked to do it?

The information from these questions is very important because it uncovers the norms and attitudes of the people.

4.10 Data analysis

According to Krueger (1994:40) data analysis involves reducing accumulated data to a manageable size, developing summaries, looking for patterns, and applying statistical techniques. In this study, NVivo software was utilised to analyse the data prescribed on content analysis. To develop theme Filstead (1971:43) indicate that Content Analysis is an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytical rules and step by step models, without rash quantification. Neuman (2011:240-271) is of the opinion that NVivo is a qualitative data analysis (QDA) computer software package that is designed to analyse qualitative data, and is essential to a qualitative researcher working with very rich text-based and/or multimedia information, where deep levels of analysis on small or large volumes of data are required (Mouton and Babbie 2001:35).

4.11 Reliability and Validity

Selected solid waste management practitioners were interviewed through a focus group to ensure the reliability and validity of the results and findings arising from the survey analysis which provided insight in the context of the subject matter. Mouton and Babbie (2001:122) refer to validity and reliability as the extent to which an empirical measure reflects the real meaning of the concepts.

4.12 Ethical considerations

Welman, Kruger and Mitchell (2005:201) are of the opinion that ethics' considerations should be a critical part of the research process from initiation of the research to the analysis and publishing of the findings. Welman and Kruger (2001:47) also indicate that the principle underlying research ethics is: honesty and respect for the rights of individuals. The following ethical consideration was taken into account in this study:

- The researcher ensured confidentiality of information;
- The researcher received permission first before collecting data from the university and the community where the research was carried out;
- The data collected was used for purpose of research only;
- Participants were assured anonymity; and
- Residents participated in the research on voluntary basis.

The participants were informed that their participation in the study was completely voluntary; that there was no right or wrong answer to the questions and that the answers would be specific to them, their thoughts and opinions. The participants were advised that should any question cause them any discomfort that they did not have to answer it and the interview could be terminated at any stage if they no longer wished to participate. The participants were also told that their data could be withdrawn from the study entirely. Participants were also assured of

confidentiality, anonymity and privacy and they were afforded a guarantee that confidential information would not be shared without each participant's informed written consent. Participants were given opportunity to complete a consent form prior the interviews refer to Annexure 3.

CHAPTER FIVE: RESEARCH RESULTS

5.1. Introduction

The chapter presents the results of the demographic section of the survey, which is the first part of the questionnaire. This section provides a clear description of the demographic characteristics of the respondents. The result of the respondent's social norms and attitudes towards household waste management (handling, storing, collection and final disposal) is presented thereafter in the second section.

5.2. Summary of the demographic profile of the respondents

This section gives a summary of the demographic profile of the respondents of Khayelitsha, which will provide a broader overview ad context of the responses collected as it relates to the norms and attitudes.

5.2.1. Demographics profile

The total number of the respondent was 300 from three formal suburbs in Khayelitsha namely: Litha Park, Khulani Park and Khayelitsha. In each suburb the researcher did 100 door to door surveys. Table 5.1 presents the total percentage of gender composition of the sample size in relation to Khayelitsha population.

Table 5.1: Gender distribution table

Gender	Sample population	Khayelitsha Population
Male	37%	48.9%
Female	63%	51.1%

5.2.2 Household size

Table 5.2: Household size

Household Number	Survey Number (n)	Survey Percentage (%)
1-2	100	33
3-4	140	46
5-6	50	17
7-8	8	3
9+	2	1
Total	300	100

5.2.3. Education level

The distribution of the respondent's educational level is representative of the sample size not of the whole population. A large number of the respondents has secondary education with few who have tertiary education, Table 5.3 represent the education level of the people of Khayelitsha.

Table 5.3: Education Level

Educational level	Number of respondent	Percentage
Never went to school	90	30
Primary level	60	20
Secondary level	110	37
Tertiary level	40	13
Total	300	100

5.3. Survey Results

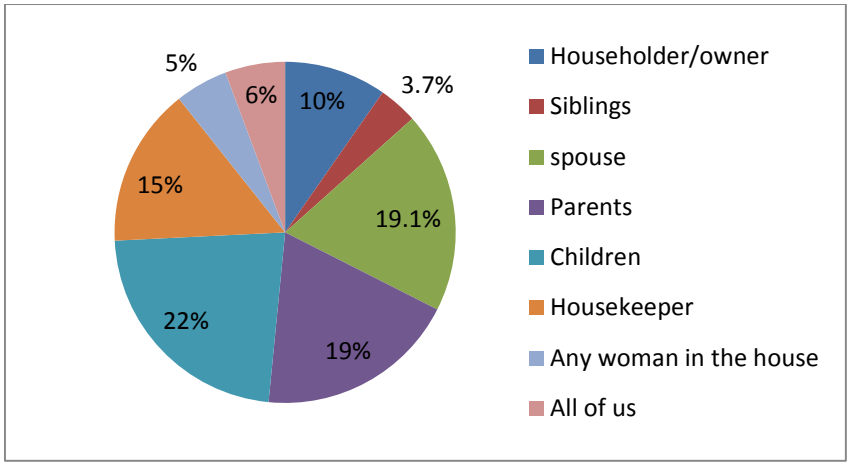
Solid waste management includes various processes waste handling, waste transportation, waste disposal, waste storage and minimisation namely: The responses to assess the social norms and attitude towards solids waste is represented into four main categories:

- What is currently practiced?
- What would the respondent prefer, which reflects their attitude?
- What are their thoughts and beliefs, which reflects their attitude?
- What and how would they act if they were asked to do it themselves, which reflects their norms?

Question 1

This question asked the respondent to indicate those who are responsible for managing (sweeping, clearing) household waste. Their responses are presented in Figure 5.1 (n=300)

Figure 5.1: Who manages (sweeps, collects) the waste in your household?



Managing of household waste is mainly the responsibility of the children (22%), 19% of the respondents indicated that it is parents and spouses, 15% of the respondents indicated that the housekeeper does the handling of waste and 10% indicated that it is the owner who does the handing of household waste, with only 6% of the respondents indicating that everyone in the household does the handling of waste 5% indicated it is any woman residing in the house.

Question 2

Figure 5.2 present the responses on who should be responsible in managing household waste (n=300).

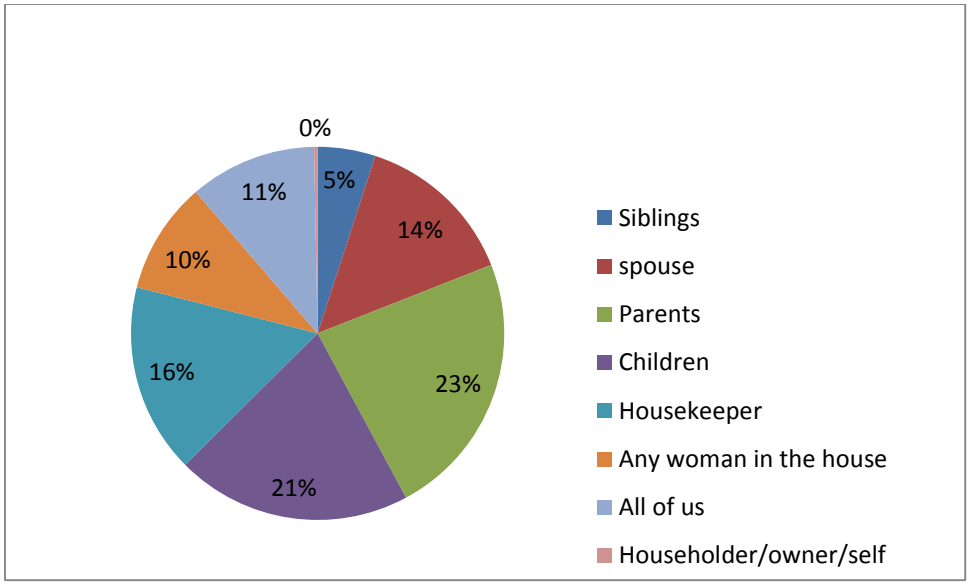


Figure 5.2: In your opinion who should be responsible for managing waste in your household?

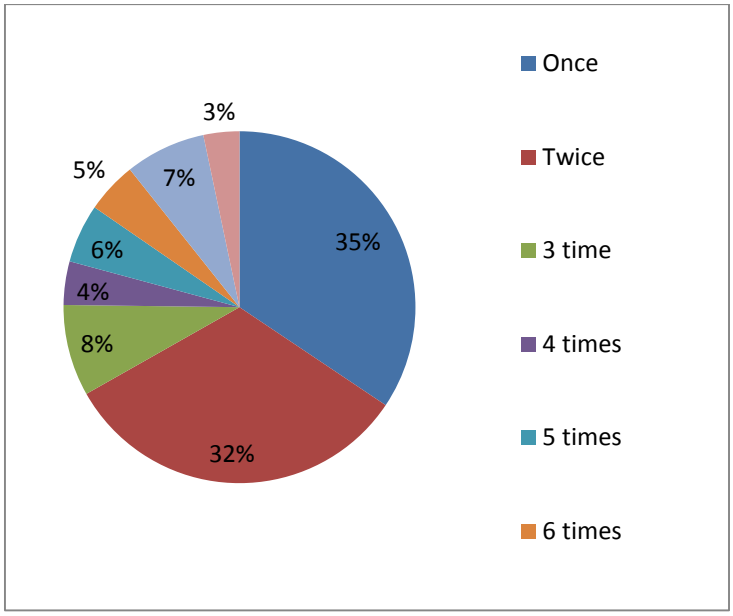
23% of the respondents think that waste handling is the responsibility of parents, 21% think that waste handling is the responsibility of their children, 16% is of the view that housekeepers should be responsible, 14% indicated that their spouse are responsible for handling waste in the household. 10% believe that the responsibility of handling waste rests upon any woman in

the house, 11% are of the view that everyone in the household is responsible for waste handling and 5% are of the opinion that waste handling is the responsibility of their siblings. None of the respondents believe that it is their responsibility to handle household waste.

Question 3

How often per week should waste be cleared and collected by household members. The responses are presented in Figure 5.3 (n=300).

Figure 5.3: How often per week is waste cleared (collected and disposed) by household members?

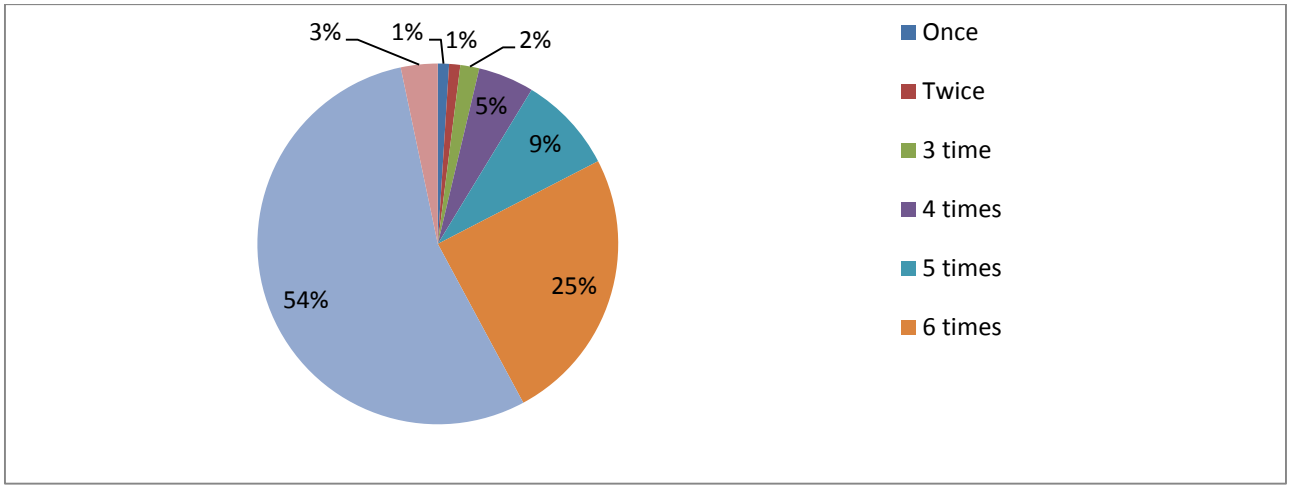


The results showed that most of the respondents 54% clear their waste once a week, else 32% of the respondents clear their waste twice a week and 8% clear their waste 3 times a week. The other 8% clear their waste every day, 6% clear their waste 5 times a week, 4% indicated that their waste is cleared 4 times a week, with only 5% indicating that their household waste is cleared 6 times a week and 3% indicated that their waste is cleared after one week.

Question 4

The respondents were requested to indicate how often per week they would they like their waste to be cleared. Figure 5.4 present the responses, which reflects on the attitude towards waste management responsibilities (n=300).

Figure 5.4: How often per week would you like waste to be cleared?

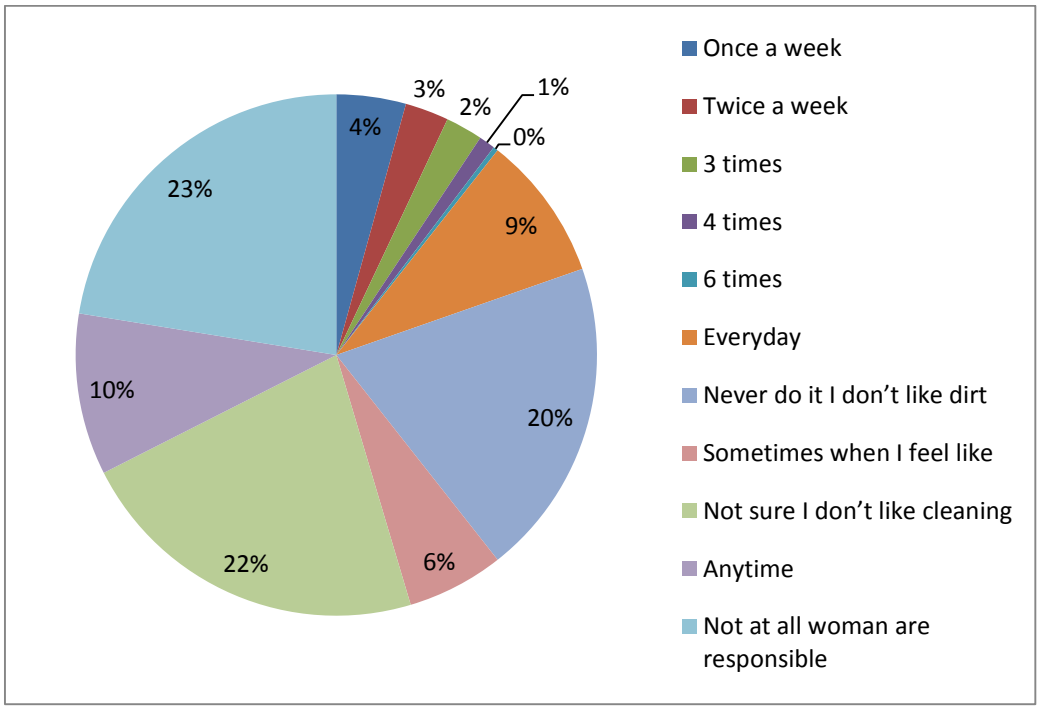


The results show that the majority (54%) of the respondent would prefer their waste to be cleared every day, 25% would prefer their waste to be cleared 6 times a day, 9 % would prefer their waste to be cleared 5 times a day, 5% would prefer their waste to be cleared 4 times a day, 3% would prefer their waste to be cleared once a week, only 1% would prefer their waste to be cleared once and twice a week followed by 3% who would prefer their waste to be cleared 3 times a day.

Question 5

The respondents indicated their willingness to clean and manage household waste if they were given the responsibility to do so, as well as the frequency therefor. Figure 5.5 present the responses (n=300).

Figure 5.5: Responsibility for cleaning and how often



The results indicated that most of the respondents 23% would clean 6 times a week; where-else 20% would never clean since they don't like dirt and they don't want to get their hands dirty. 22% not sure since they don't like cleaning, only 9% would clean every day, 10% would clean anytime when they were asked to do so,4% would clean once a week, 3% would clean twice a week, 2% would clean 3 times a day with 1% cleaning 4 times no one indicated that they would not clean.

Question 6

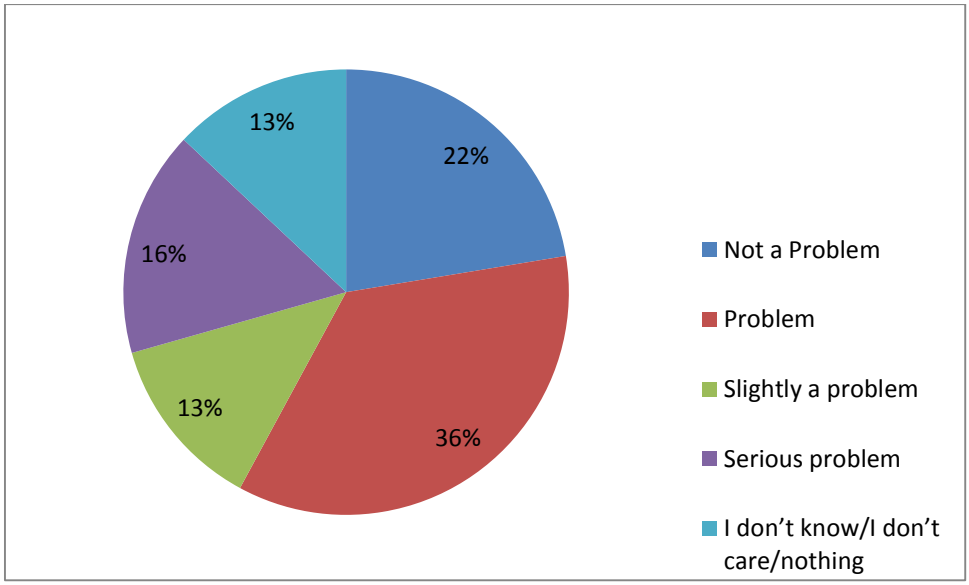
This question required the respondents to indicate if waste handling is a problem or not in their household, and if so, to furnish a reason why they think it is a problem (n=300).

The results indicated that 50% of waste handling was considered a problem in the household. The reasons for the waste handling problem are: no time, too many children to mind, no proper storage containers, not having sufficient storage space and being reluctant, attracting flies and animals, environment and health problems, and cleanliness and smell

Question 7

The question tested the respondents' perception of littering in Khayelitsha. The respondent's responses are presented in Figure 5.7 below (n=300).

Figure 5.7 What Do You Think Of Littering In Khayelitsha?



Waste is perceived to be a problem in Khayelitsha by the majority (36%). 22% of the respondents perceived waste as not to be a problem, 16% perceived waste as a serious problem, 13% indicted that they don't know whether waste is a problem or not, and that they do not care with 13% perceiving waste as a slight problem.

Question 8

The respondents had to indicate that they separate their household waste prior to disposal and if not to furnish a reason for not separating their waste (n=300).

33% of responded indicated that they practiced waste separation, whereas 67% did not. Waste in the household is being separated mainly by children, female individuals; in some instances everyone in the household is responsible for waste separation. Householders indicated that they mainly separate food, tin, glass and plastic bottles and plastic bags.

Question 9

Respondents who did not practice waste separation were asked to furnish a reason for not separating waste before disposal (n=300).

The reasons the respondent provided for not separating waste are:

- Laziness;
- No time;
- No practical purpose for doing so;
- Dirty and unhealthy;
- Lack storage containers/space; and
- Lack of awareness

5.2.4 Waste storage

This section of the survey was designed to ascertain out how waste was stored in the household and how long it is stored including the problems associated with waste storage and how best these problems could be overcome.

Question 10

The respondents were questioned on the methods they utilized to store their waste in their household. The results indicate that there were different ways for waste storage. Some storage methods were more common for sorting of a particular waste type as opposed to other methods. Storing in plastic bags was very common for waste such as diapers. Waste such as cloth, and paper are commonly stored in a cardboard box and open containers (n=300).

Question 11

This question requested the respondents to indicate how they would prefer their waste to be stored in their household. The responses indicated that the refusal bins or containers with the secured lid was the most popular way in which householders would prefer their waste to be

stored. Plastic bags were preferred by some of the householders, and other householders preferred the utilisation of the cardboard box to store their household waste (n=300).

Question 12

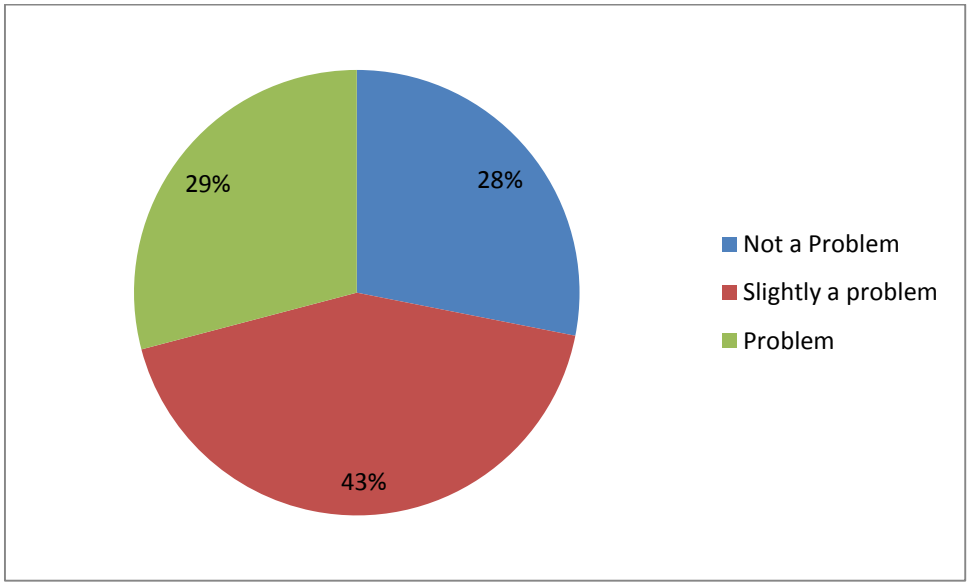
This question asked the respondent how they would store their waste if they had to do it themselves. This question was presented in order to determine the norms and attitudes to waste storage (n=300).

The results showed the variation in waste storage practice: 30% of the respondents indicated that they stored their waste in plastic. 20% indicated that they stored their waste in a cardboard box, 5% stored their waste in refuse containers provided by the municipality, and 45% stored their waste in an open space.

Question 13

The respondents were asked if waste storage is a problem in their household. The results are presented in figure 5.13 (n=300).

Figure 5.13 Is waste storage a problem in your household?



The response showed that most (43%) perceive waste storage as a slightly problem, 29% perceived it as a problem and 28% perceived it as not a problem.

Question 14

This question requested the respondent to indicate which type of waste, is a problem during storage. The responses reflected that papers, tin cans, aluminium cans, glass jars, containers and food scraps were the problem when stored (n=300).

Question 15

This question requested the respondents to identify problems of waste storage within their household. The following were identified as a problem: Lack of containers, waste scattered by animals especially cats and the attraction of flies and insects (n=300).

Question 16

The respondents were requested to provide an opinion on how waste storage could be improved in their household. The respondents indicated that waste storage could be improved by making available containers with secured lids, disposing of waste regularly; training household members to store waste properly and for household members to share responsibility of ensuring waste is stored before being disposed of (n=300).

***Question* 17**

This question tested the respondents for the methods they utilised in their household to dispose waste (n=300).

The responses indicated that householders commonly burn most of their waste such as paper, plastic bags and cardboard box. Waste such as cans, glass jars and containers they bury, food is disposed along with plastics and cardboard box and a dumping of waste on an unoccupied area is also practiced.

Question 18

This question asked whether the method used was the best. The respondents considered that the method they currently utilising as the best (n=300).

Question 19

This question was directed to those who answered no to question 18 (n=300). The respondents were requested to indicate the methods they consider best for their household waste disposal. The respondents indicated that disposing waste at the waste side, recycle waste and re-use of other waste and burring them is the best method for household waste disposal.

Question 20

This question requested the respondent to indicate why the best method was not utilised.
The reasons for not practicing such methods were (n=300):

- Laziness;
- No time;
- Costly; and
- Recycling depot is at a distance and there is only one available to everyone.

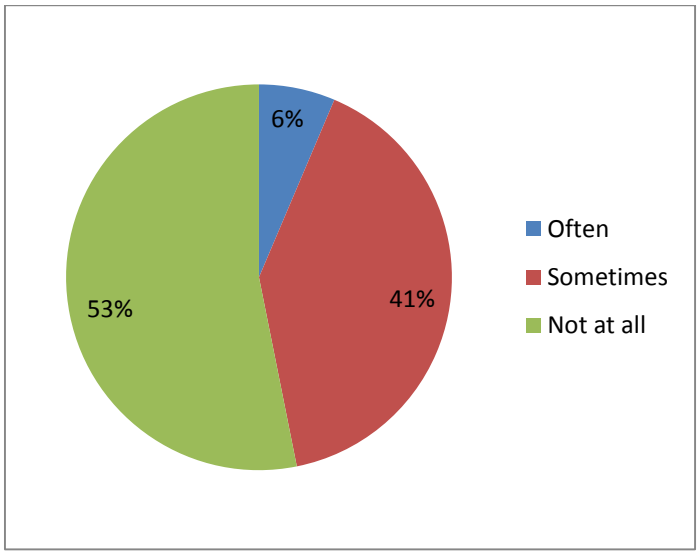
5.2.6. Waste minimisation

This section was designed to examine the 4R of waste minimisation and their application in the Khayelitsha community (n=300).

Reduce/ avoidance

In this question the respondents were requested to indicate how often a person in their household takes a shopping bag when going shopping. A shopping bag used here is referring to any bag not only that one made out of plastic. The results shown in Figure 5.21 reflected that sometimes 41% use shopping bags when going shopping, 53% never use a shopping bag when shopping and 6% often take shopping bags when shopping.

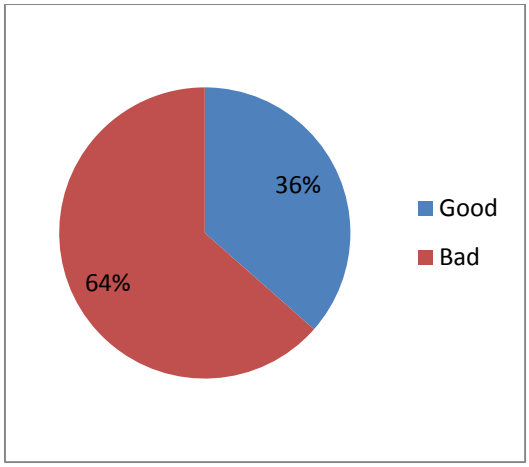
Figure 5.21 How often does a person in your household take a shopping bag when they go shopping?



Question 22

This question asked the respondents for their opinion on the use of the shopping bags. Figure 5.22 reflect the response to the question.

Figure 5.22 what do you think of the idea of taking a shopping bag when go shopping?



36% thought it was a very good idea to take shopping, with the following reasons that:

- It saves money and
- Reduces waste to be scatted around the household

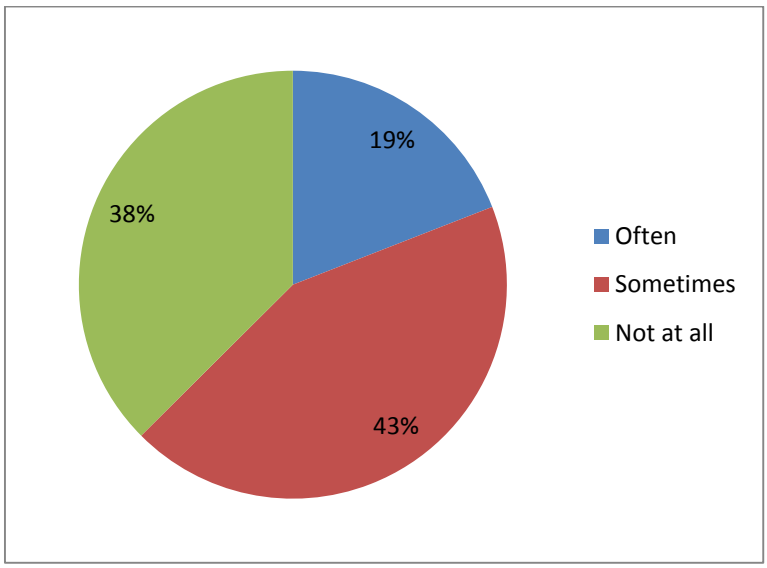
64% thought it was not a good idea, with the following reason:

- It doesn't look right in the eye of others;
- Once a bag is used it is meant to be thrown away; and
- My neighbour will think I borrowed food somewhere else.

Question 23

The respondents were requested to indicate how often they utilised shopping bag when shopping. The question was presented to indicate if there is any difference between behaviour and practice. The responses presented in Figure 5.23 indicate that most would sometimes take a shopping bag and that their attitude is not similar to the household practice revealed by the responses in question 21.

Figure 5.23 How often do you take a shopping basket/bag/container when you go shopping or to the market? Why?



43% indicated that they sometimes take a shopping bag when going shopping, with the following reason:

- It saves money; and
- Reduces waste to be scatted around the household

38% never utilise a shopping bag when shopping, because of the following reasons:

- It doesn't look right in the eye of others;
- Once a bag is used it is meant to be thrown away; and
- My neighbour will think I borrowed food somewhere else.

19% indicated they often take shopping bag when going shopping.

Question 24

Re-use

The respondents were requested to indicate whether they re-used household waste (n=300). The results are presented in Table 5.5. Here-under.

Table 5.5 Wastes Re-use

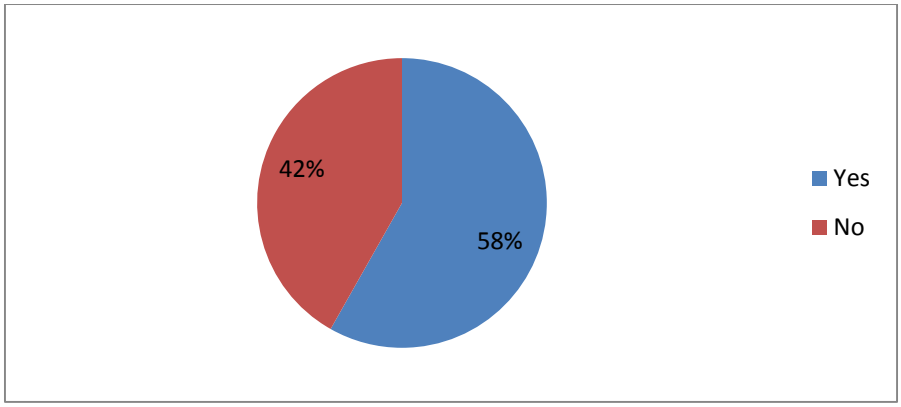
Waste Type	**Yes**	**No**
Plastic bag	70	89
Plastic bottle container	66	100
Glass bottle/jars	87	99
Cardboard boxes	120	67
Papers	50	120
Cloth	88	196
Aluminium cans	17	95
Tin cans	80	99
Food scraps	79	89
Others: specify?	6	29

The Majority of the respondents indicated that they do not re-use most of the waste; however a few respondents re-used aluminium cans.

Question 25

The respondents were requested to indicate the appropriateness of re-using waste so as to manage waste in their household efficiently. The question attempted to assess their norms and attitude towards waste Re-use.

Figure 5.25 Do you think waste reuse is appropriate to manage waste?



Most of the respondents (58%) consider waste re-use as appropriate to manage waste and 42% said it was not appropriate.

Question 26

This question requested the respondents to provide the reasons for not re-using waste (n=300). The question was directed to those who said they do not re-use waste. The responses to this question were: My neighbour will think I'm poor if I re-use my waste, Laziness and No time

Recycling

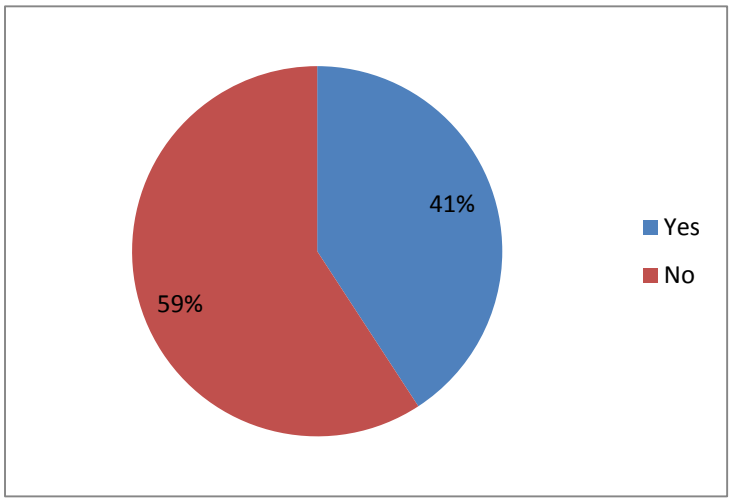
Question 27

This question requested the respondent's about their knowledge of recycling. The results showed that only 25% identified themselves as knowing anything about recycling. Most (60%) thought they only knew a little and 15% admitted to knowing nothing at all.

Question 28

This question requested the respondents about their knowledge of the recycling service available in their community. Figure 5.28 presents the results to this question.

Figure 5.28 do you know any recycling service available?

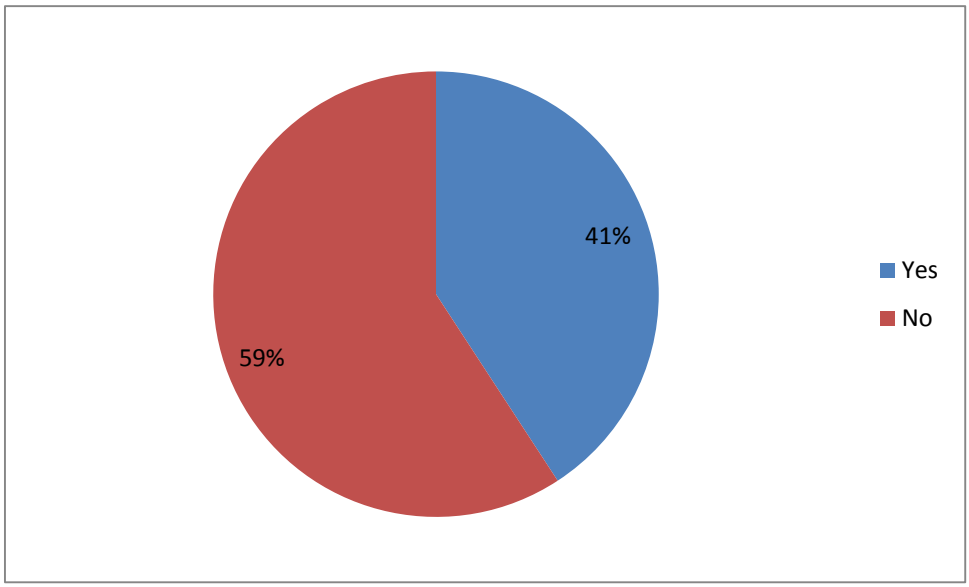


The responses showed that 41% knew that the recycling service were available, However, 59% admitted not to knowing about the available recycling service.

Question 29

This question asked the respondents if they use the recycle service available. The results are presented in Figure 5.29.

Figure 5.29 Do you use the recycling service (s) available?



The response showed that 59% did not use the available recycling service and only 41% utilised this facility.

Question 30

This question was directed to those who said yes to question 30. The respondents were asked what they recycle. The response showed that the respondents recycled the following items:

- Glass;
- Steals;
- Aluminium can and;
- Plastic bottles.

Question 31

The respondents were requested to furnish their opinion on the efficiency of the available recycling service.

The results showed that the recycling service was not working efficiently because

- Poor service facilities;
- Far distance from the communities ; and
- Only one recycling service is available.

Question 32

This question requested the respondents to furnish their reason for not recycling. The main reasons for not recycling as presented by the respondents are:

- Lack of awareness or available service;
- Lazy and have no time;
- Not taking interest in recycling; and
- Household do not have enough recyclable materials to warrant using recycling service.

Question 33

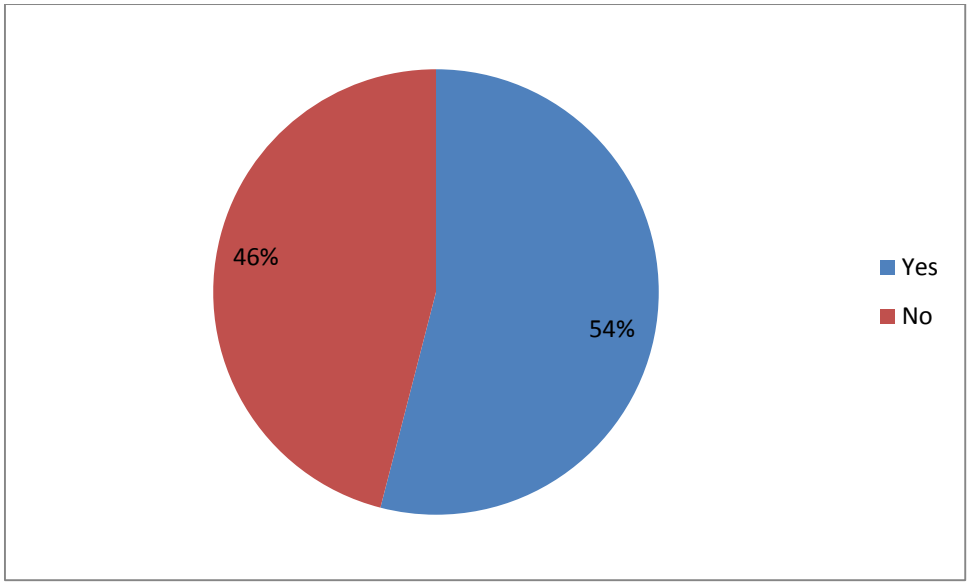
The respondents were requested to indicate their willingness to recycle if the recycling service was available and operated efficiently. Their response showed that 80% of the respondent would be very eager to recycle.

Recovery

Question 34

This question tested the respondents' knowledge on composting. In Figure 5.34, 46% knew about composting, and 54% knew nothing about composting (n=300).

Figure 5.4 Do you know anything about composting?



Question 35

The respondents were requested if they compost some materials. The question was directed to those who were aware of composting. The results reflected Figure 5.36 indicated that 63% do not compost because of:

- Lack of composting knowledge;
- Laziness and no time; and
- Had no need to as the soil is beautiful and fertile

Question 36

This question asked the respondent to identify the waste type they compost. The waste type identified were, garden/yard waste and food scraps.

Question 37

The respondents were requested to indicate their willingness to compost waste if taught the proper method to compost. Most (58%) of the respondent said they would be very eager, some (30%) would be eager other (15%) slightly eager and (20%) not eager at all

Question 38

This question requested the respondents on their opinion on what could be done to minimise waste. The responses given were:

- Need more refusal bins;
- Community to work together in cleaning the street;
- Household members need to take responsibility in clearing waste;
- Need a good recycling service; and
- Education on waste re-use, reduce and recycle.

CHAPTER SIX: ANALYSIS AND FINDINGS

6.1. Introduction

An analysis of the results and the findings arising therefor is presented in chapter 5 is described in this chapter. Being the first detailed study of its nature in Khayelitsha, this study provides a further study. The information provided may enlighten and empower educational programs, government, non-governmental organisation, individuals and interest groups on the most appropriate and suitable approaches when managing waste in attempt of alleviate the negative waste and litter problems in Khayelitsha.

The data represented in this chapter was collected and processed using a qualitative technique. The chapter first gives a summary of the respondent's demographics and the empirical findings in terms of the research findings.

6.2. Demographic of the research respondents

The respondents were resident in different areas within Khayelitsha. The survey group did not possess a formal qualification. 37% of the participants in the survey group were educated to secondary level. The household owners were mainly previously disadvantaged in terms of access to education. Householders in Khayelitsha are in their late 50s. 46% of household size in Khayelitsha comprise of four to five members with 1% of the household having nine members and above. The group selected for this study are representative of the formal Khayelitsha householders.

6.3. Waste Generation

Plastic bags and plastic packaging are the major components of household waste. The abundance of packaged goods and other different waste types suggest the lifestyle, reliance and dependence on packaged goods. Reliance has implications on waste management in Khayelitsha; as such waste will continue to increase as the standard of living increases.

6.4. Waste management

The current waste handling practice is the responsibility of children and women whereby, 40% of children are school dropouts. Women are responsible for house chores while husbands are at work. 40% of the parents are working but 60% of them are pensioners. The results further indicate that men are responsible for handling garden and yard waste including aluminium cans and tin cans. Programs, campaigns and promotions for community clean-up and other

similar interventions should include everyone and not focus on women. The involvement of every household member in cleaning waste has a positive implication in managing waste. The larger house household with more than nine (9) members are less worried of their waste management problem and who should be responsible for handling household waste, as many members in the household can share this responsibility of managing waste.

Reasons identified for waste management problems in the household, these reasons have a bad influence on waste management in the community. Reasons submitted are 'not having time to manage waste' and 'too many children', which implies that waste is not considered as a higher priority in the household as it is the last priority, In certain instances it may not even undertaken due to not having time. Children could be responsible for an over consumption of the waste and those who are responsible for managing waste might give up in tidying waste sourced by children. Problems such as 'laziness' were identified also, on an individual basis, Household members of Khayelitsha may seem lazy in managing waste but if community member's work together to achieve a particular purpose or goal they may not be lazy. Household members identified lack of proper storage as one of the problem. Further problems such as the attraction of flies, environment and health problems are related to lack of proper storage.

6.4.2. Waste clearance

Clearing of household waste is mainly undertaken once a week, however the respondent's attitudes to waste clearance showed a difference from normal practice. 54% of respondents would prefer their waste to be cleared on a daily basis.

6.4.3. Littering

Littering is perceived as being a major problem in Khayelitsha, there is waste on the street sidewalks, and this was revealed during field observations. Householders have a tendency of taking care of their surroundings, and have little respect of public places. This is shown by the high number (45%) of respondents who place litter in plastic bags and throw it away in the public open space or sweep their yard waste to the street. This is common to every householder in Khayelitsha, regardless of the different socio-demographic characteristics. This needs to be addressed from an individual perspective as litter has economic, social and safety cost.

The City of Cape Town is responsible for cleaning streets and other public places, currently there are no street sweepers in Khayelitsha and there are many direct and indirect costs

incurred by litter ugliness. The beauty of the community is damaged by the litter which in turn affects the community's quality of life and economic well-being because business and individuals do not like to settle unattractive areas. Litter poses a risk to health and safety of the community. Various studies discussed in Chapter 2 suggest that several strategies to eliminate attitudes towards litter, such as written and verbal reminder, community rewards as an incentive. Such strategies may however not be applicable to Khayelitsha since they were designed for a targeted population. Community involvement with regard to incentive rewards has not been considered in Khayelitsha to reduce litter, the effectiveness of these interventions have not been tested.

There are various laws including by-laws that state that it is illegal to litter in the City of Cape Town area of jurisdiction, however there is little enforcement of such laws. Is important for the appropriate authority to enforce such laws if Khayelitsha so as to improve aspects of their life from an economic, health or environment. The responses of the respondents towards litter were so different from their attitudes towards litter and disposal practice. Most of the respondents, did not like the way their community was untidy due to litter and did not like accept the manner in which people litter in public places.

6.4.4. Waste separation

Majority (67%) of householders do not practice waste separation. However their attitude reveals that they would not like to separate waste because of laziness, having no time, having many children to take care and there is also no practical purpose in doing so. Minority (33%) undertook waste separation for the purpose of recycling; this implies that there is a need for awareness. More awareness is needed in the community of Khayelitsha for waste separation, it is important that the community knows the benefit of separating waste.

6.5. Waste storage

Household waste is stored in different ways in Khayelitsha, as discussed in chapter 5. Householders are provided with refusal containers with secured lids, although waste is stored in boxes, plastics bag, and empty bins with no lids. The householders are satisfied with their method for storing waste. The problem identified such as waste scattered by animal's especially wild cats and attraction of flies and insects, indicate that the present waste storage is unsafe and insecure.

6.6. Waste disposal

Household waste is disposed using various methods, as described in chapter 5. Burning and burying of waste is commonly used in Khayelitsha, such as paper, plastic bags and cardboard boxes are burned and waste such as food, glass, can are buried. 67% of householders dump their waste at an open or unoccupied space. Most (67%) of the respondents indicated that the current method used for disposal is effective and the best one. Those who thought that the method was not ideal suggested that recycling should be undertaken to recyclable waste, re-use for the re-usable waste and disposal of waste at the waste site is the best method. Since waste is burned in Khayelitsha further research needs to be conducted to find the quantities of waste burned by households. Awareness programs need to be considered to educate public on the type of waste, which is safe or unsafe for burning on health and environmental grounds. The first method is regarded as the best method to inform and educate the community prior to establishing an awareness programme. Future research should be undertaken to explore the possibility of running economical viable recycling programs since recycling has been considered as an alternative for the best disposal method as there is no nearby recycling centre in Khayelitsha

6.7. Waste minimisation

Waste minimisation will be describes in terms of reduction/avoidance, Re-use, recycle and recovery

6.7.1. Reduction/avoidance

Waste reduction or avoidance is important to minimise the increase of waste generation. Respondents indicated that plastics bags are the most abundant waste generator in the household, because householders use plastic bags almost everywhere to carry shopping and goods. Making use of shopping bags instead of plastic bags will have a good implication in minimising household waste. The majority (64%) will not take nor do not think it is a good idea to take shopping bags when going shopping, they think it doesn't look right and once a bag is used it is meant to be thrown away. This implies that such attitudes are not common to all, and there is a need to encourage good attitudes and put them to action. Research needs to be done in order to successfully implement this by exploring various ways and means to encourage people to practice re-usable shopping bags.

6.7.2. Re-use

Another way to minimise waste is through re-using most of your household waste, 58% of the respondents in Khayelitsha think it is appropriate to re-use waste with 42% who think it is

inappropriate to re-use waste. In Khayelitsha 120 householders re-use cardboard boxes; they store their unwanted items like old cloth and blankets. The re-use attitude in this study is similar to those recorded in literature therefore any program to encourage and motivate waste Re-use will be applicable to the entire population. Therefore future research is needed to see how the re-use of waste could be maximised in future. This will have positive implications on the environment and health of individuals because others can use what one throws away and it will reduce the amount of waste that needs to be disposed.

6.7.3. Recycle

Currently in Khayelitsha there is no recycling service nearby, there are contractors who come and collect recyclable items in the households, in exchange of money. 25% of the people in Khayelitsha have knowledge about recycling, with 60% who identified themselves as having an insight of recycling. Recycling is a primarily concern with processing re-used waste into a new product. A recycling service should be installed in Khayelitsha, so that the community of Khayelitsha will be able to recycle, as this would assist in reducing waste, which is already a problem in the community.

6.7.4. Recovery

54% of people in Khayelitsha know nothing about composting, and 34% have knowledge about composting. People should be educated in composting because of the importance of recovering energy from composting. Most (58%) respondents are eager to compost if taught properly, so there is a need for an educational program on composting, such attitudes need to be utilised and be encouraged and put in good use.

6.8. Conclusion

The majority of the responses were consistent for all categories of respondents and did not vary according to the respondents' background, such as gender, location, household size or education. The findings are that Khayelitsha householders tend to think similarly about waste management and they have similar norms, attitudes generally. Programs that may be designed to address the issue of waste mismanagement could effectively work in the whole population.

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS

7.1. Conclusion

The continued persistence of littering and mismanagement of waste in Khayelitsha resulted in the researcher adopting the assumption that waste management problems are related to the norms and attitudes of Khayelitsha people. In order to study this assumption and its effect on waste management in Khayelitsha, the researcher investigated the impact of social norms and attitudes of the people of Khayelitsha towards waste minimisation initiatives in Khayelitsha households. The researcher also obtained explanations as to why waste minimisation initiatives are underperforming. To do this, the entire household waste management operation was examined. The objectives of the study were:

- To understand the impact of the social norms and attitude towards waste minimisation initiates;
- To establish the main causes of solid waste mismanagement in Khayelitsha;
- To ascertain whether the householders attitude to recycling are a contributing factors to poor recycling performance;
- To investigate social norms and structural influences towards waste minimisations; and
- To identify any changes in waste minimisation intentions which household people would like to implement.

7.2. Findings of the survey

- Waste generation in the household varies in abundance, and peoples' perception of waste is also different according to waste type. Waste in Khayelitsha is regarded problematic by most of households.
- Waste management responsibility in Khayelitsha is mainly for children, with parents and man sharing responsibility for some waste types. People's attitude on waste management responsibility are very similar with their current practice, they do not think it is their responsibility to manage waste.
- Waste in the household is cleared once a week in many houses, respondents attitudes towards their preference of waste clearance is different from what they practice, the responded prefer their waste to be cleared daily whereas they clear their waste once a week.
- Most of the households in Khayelitsha do not separate waste before disposal, few prefer to separate waste before disposal, main reasons identified for not separating waste were, laziness, no time, and no practical purpose for doing so.

- There are various ways (card box, plastic bags, refusal container provided by the municipality and storing waste in an open space) in which household waste is being stored in Khayelitsha. People in Khayelitsha prefer their waste to be stored in a secure container with a lid which is different to what they practice, this attitude is similar to what people would like to change about the current storage, they would love to use container with secured lid to improve the current waste storage. Also it was suggested that household members should be trained to store their waste properly, and to share waste management responsibility and dispose their waste in a regular basis. These changes were suggested by Khayelitsha heads of household as changes they want to implement to improve storage of household waste.
- Litter in Khayelitsha is perceived as problem households and individuals did not like the way in which people litter around the community, households would prefer litter to be disposed in garbage containers.
- Disposal methods for waste used in Khayelitsha include burning, using unoccupied land or open space and burying of waste. Households normally burn waste such as(paper, plastics and plastic bottles) they burry (food, can, and bottles) any unwanted items such as TV, radios, and garden waste, waste generated from renovation or building of house is dumped in an unoccupied land or open space.
- Majority of respondents take their shopping bags when going shopping, this avoids generating waste (plastic bag, packaging) that is caused by doing shopping without shopping bags. People's attitudes towards carrying a shopping bag to the shop is really different to what they do, most of respondents think that is a bad idea to take shopping bag because neighbours will think they borrowed food somewhere else.

  The majority of people do not practice recycling because they have very little knowledge about recycling and recycling services are far from the community. Some of the reasons they give for not recycling are laziness, and no time. Most of the respondents however will be very eager to recycle if taught the proper ways of recycling.
- Most of the respondents do not compost because they do not know anything about composting, those who know about composting do compost waste such as (food, garden and yard waste). Reasons for not composting as indicated by the respondents include lack of composting knowledge, laziness and no time, and no need to as the soil is fertile.

7.3. Limitation of the study

There were few limitations encountered while conducting the research, even though these did not have impact on the results of the survey. The interview questions were both in Xhosa and English, the questions were translated to Xhosa because majority of the people interviewed were Xhosa speaking people, this allowed the responded to freely express their answer in their mother tongue. Due to time constrains, resources and scope of the survey the research was tailored towards understanding the effect of social norms and attitude towards waste initiatives in Khayelitsha established households. A lager study is recommended. Top decision makers were not targeted to determine their perception and attitude. Findings as such will be really important to facilitate any actions and decisions, which are necessary to improve waste management in Khayelitsha.

Conclusion

Having identified the current waste practice of people of Khayelitsha and uncovered their norms and attitude towards waste management, one can conclude that norms and attitudes of people of Khayelitsha influence the way in which waste is being managed in the household. The social norms and attitudes of people of Khayelitsha are influenced by the transcending power of the broader social, economic, political and culture of people of Khayelitsha.

7.4. Recommendations

Norms and attitudes of people of Khayelitsha identified and uncovered contribute to improve waste management decisions for Khayelitsha. In order to improve waste management the following is recommended:

- CoCT solid waste management unit should influence the adoption of waste minimisation schemes through tax structure.
- CoCT solid waste management should consider purchasing more refusal collection trucks and implement a fully communal refusal collection system that covers the needs of Khayelitsha for example government should consider making waste collection compulsory for all households in Khayelitsha.
- CoCT solid waste management should improve the existing waste collection facilities and ensure that waste workers are equipped with necessary skills to maintain a regular and efficient service collection.
- CoCT solid waste management should implement a fair fee structure either per months or payment by weight or volume waste collected.

Waste management recommendations

- Some antecedent strategies discussed in (Chapter 2) could be tested out in Khayelitsha to explore various applications in clean-up and anti-littering programs.
- Programs for training children on waste management should be incorporated at schools from a pre-school level; this will in the long run benefit the whole community.
- There are various clean-up programs within the community, many of them are on a short-term basis, and they all prove to be successful. Further research should be conducted to find means by which community members will still get involved in the clean-up programs to establish long-term goals. Household members identified lack of proper storage as one of the problem. Problems such as attraction of flies and environment and health problems are related to lack of proper storage. It is important for government and non-governmental organisation to take into consideration these problems. Action can be taken to minimise the impact on health and environment of mismanagement of waste due to lack of proper storage facilities.

Waste storage recommendations

- The proposed way to improve household waste storage is to provide waste storage training and introduce a policy where householders will be fined if they do not store their waste in the refusal bin prior to disposal and if they are found using refusals bins for anything rather than storing waste. Other suggestions include training household members to store waste properly. Further research is needed to explore means in which these suggestions can be best implemented to minimise waste. Any program will be applicable targeted to address waste storage in Khayelitsha so that the general population seems to have a common practice and attitude to waste storage.

Waste minimisation recommendations

- Government should work or partner together and consider financial incentives and levies to encourage re-use and recycling.
- Government should negotiate with other countries, recycling companies for purchase of the purchased recycled materials.
- Government should consider the economic value of compost.

Awareness, education and training

- Community members should be made aware that waste is a resource and very little should be dumped.

- CoCT solid waste management should run awareness and educational programs using various platforms such as multi-media and face-to-face contact through community groups to promote and educate the public about:
  Clean-up and anti-litter;
  Waste disposal practice in a way that would be least harmful to the environment and health of people;
  Composting knowledge and recycling;
  Improper waste management impact on health and environment;
  Legislation knowledge and regulation regarding waste; and
- Solid waste management should be incorporated into primary, secondary and tertiary curriculum so that children are made aware and influenced in their attitudes and practice to waste management.

Considering the above recommendations, decision makers would improve waste mismanagement in Khayelitsha. This will contribute to a better clean and healthier environment for the people of Khayelitsha considering that many of these recommendations require minimal cost and others can be implemented at a lower level.

7.5 Future research

- Similar study can be conducted in the informal settlement to find out their waste management practice.
- A study can be conducted to discover strategies that would be most effective in transforming the attitude of Khayelitsha household into actions.
- A survey can be conducted to research on how best waste management knowledge can be taught in Khayelitsha such as composting and recycling

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APPENDIX A: INTERVIEW QUESTIONS IN ENGLISH

FACULTY OF BUSINESS
Department of Public Management

26 April 2016

Dear Head of Household

I am a post graduate candidate at the Cape Peninsula University of Technology (CPUT), Cape Town, South Africa pursuing a Magister Technologiae in Public Management. I am in my final year of study and as part of the requirements for degree the attainment of the Master's Degree qualification, I need to complete a research study. The topic of the research study is entitled:

The effect of social norms and attitudes towards domestic waste in a selected formal settlement in the Cape metropole located in Western Cape, South Africa.

The purpose of this research is:

- To understand the impact of the social norms and attitude towards waste minimisation initiatives
- To establish the main causes of solid waste mismanagement in Khayelitsha;
- To ascertain whether the householders attitude to recycling are a contributing factor to poor recycling performance;
- To investigate social norms and structural influences towards waste minimisations; and
- To identify any changes in waste minimisation intentions which households would like to implement

I shall be pleased if you would allow me to ask you questions which you may answer informally. Your responses will be treated confidentially and with anonymity when writing the research report, and will not be used for any other purpose.

Thank you very much in advance.

For more information and queries concerning the research you can contact the researcher Aifani Confidence at Aifanitahulela@gmail.com or call: 0787023714

PART I

IDENTIFICATION DATA

*Please circle what is applicable and fill in your Ward/section number.

TYPE OF RESPONDENT	PREMISE OWNERSHIP.		WARD/SECTION	NUMBER OF HOUSEHOLD MEMBERS	SEX		HIGHEST LEVEL OF EDUCATION.
Resident for more than 5 year	Owner	Tenant			Male	Female	Never went to school
							Primary level
							Secondary Level
							Tertiary Level
Resident for less than 5 years	Owner	Tenant			Male	Female	Never went to school
							Primary level
							Secondary Level
							Tertiary Level

PART 2: INTERVIEW QUESTIONS

1 LITTERING

1. Who sweeps, and collects the waste in your household?

2. In your opinion who should be responsible for managing the waste in your household?

3. How often per week is waste cleared (collated and disposed) by household members?

4. How often per week would you like waste to be cleared?

5. If you are asked to do the cleaning, how often would you do it?

6. If waste handling is a problem in your household why do you think it is a problem?

7. What do you think of littering in Khayelitsha

8. Is waste separated before disposal? If yes

   -Who does the separation?

   -What waste is separated?

   -How is it done?

9. If no? Please give a reason (s) for not separating the waste.

2. WASTE STORAGE

10. How is waste stored in your household before disposal?

11. How would you prefer for waste to be stored in your household?

12. How would you store the waste if you are asked to do it?

13. Is waste storage a problem in your household?

14. Which waste has storage problem in your household?

15. What is the problem?

16. In your opinion how can waste storage be improved in your household?

3. WASTE DISPOSAL

17. How is a waste disposed in your household?

18. In your opinion is this the best disposal method?

19. If not what disposal methods would you consider the best?

20. Why isn't that method practiced

4. WASTE MINIMISATION- (Re-use, Recycle, Reduce, and Recovery)

Reduce/ avoidance

21. How often does a person in your household take a shopping bag when go shopping?

22. What do you think of the idea of taking a shopping bag when go shopping?

23. How often do you take a shopping basket/bag/container when you go shopping/market?

Reuse

24. Do you re-use any of the following? Tick which is applicable

	Tick
Plastic bag	
Plastic bottle container	
Glass bottle/jars	
Cardboard boxes	
Papers	
Cloth	
Aluminium cans	
Tin cans	
Papers	
Food scraps	
Others: specify?	

25. Do you think waste re-use is appropriate to manage waste?

26. What factors stop you from re-using waste?

Recycle

27. Do you know anything about recycling?

28. Do you know of any recycling services which are available?

29. Do you use the recycling service (s)?

30. If yes? What do you recycle?

31. Do you think the recycling service (s) is/are working efficiently?

32. If you are not recycling why are you not recycling?

33. If the recycling service is available and run efficiently, how eager are you to recycle?

Recovery

34. Do you know anything about composting?

35. Do you compost?

36. What do you compost?

37. If taught the proper way to do composting, how eager you will be to compost?

38. What else do you think can be done to minimise waste?

Thank you for your time!!!!!!!!

PART 3: OBSERVATION SHEET

STRUCTURED OBSERVATION SOCIAL NORMS AND ATTITUDE TOWARDS SOLID WASTE MANAGEMENT IN KHAYELITSHA FORMAL SETLEMENT

1. Presence of waste containers/bins

2. Type of container/bins

3. Neatness of environment (All waste in containers/on the pit)

4. Evidence of sorting
5. Innovative disposal

APPENDIX B: INTERVIEW QUESTIONS IN ENGLISH AND XHOSA

FACULTY OF BUSINESS
Department of Public Management

26 April 2016

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							Secondary Level
							Tertiary Level
Resident for less than 5 years	Owner	Tenant			Male	Female	Never went to school
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							Secondary Level
							Tertiary Level

PART 2: INTERVIEW QUESTIONS

2 LITTERING

39. Who sweeps, and collects the waste in your household?
    Ngubani otshayela, kwaye eqokelela inkunkuma kwikhaya lakho?

40. In your opinion who should be responsible for managing the waste in your household?

    Ngokokucinga kwakho ngubani ekufuneka abe noxanduva lokulawula inkunkuma kwikhaya lakho?

41. How often per week is waste cleared (collated and disposed) by household members?
    Rhoqo ngeveki i-hamba njani inkunkuma (zadityaniswa kwaye kulahlwa) ngamalungu ekhaya?

42. How often per week would you like waste to be cleared?
    Ungathanda inkunkuma rhoqo ngeveki ukuba ihanjiswe njani/nini?

43. If you are asked to do the cleaning, how often would you do it?
    Ukuba ucelwa ukuba wenze ukucocwa, ubungyenza kangaphi?

44. If waste handling is a problem in your household why do you think it is a problem?
    Ukuba ukuphathwa kwenkunkuma yingxaki kwikhaya lakho kutheni ucinga ukuba kukho ingxaki?

45. What do you think of littering in Khayelitsha
    Ucinga ntoni ukungcolisa eKhayelitsha

46. Is waste separated before disposal? If yes / Ingaba inkunkuma iyohlulwa phambi kokulahlwa? ukuba uthi ewe

    -Who does the separation?
    Ngubani oyohlulayo?

-What waste is separated?

Yintoni inkunkuma oyohlulwayo?

-How is it done?

- kwenziwa njani?

47. If no? Please give a reason (s) for not separating the waste.

Ukuba ayohlulwa? Nceda unike isizathu sokuba ingohlulwa inkunkuma.

2. WASTE STORAGE

48. How is waste stored in your household before disposal?

Igcinwa njani inkunkuma kwikhaya lakho phambi kokulahlwa?

49. How would you prefer for waste to be stored in your household?

Ungathanda njani ukuba inkunkuma igcinwe kwikhaya lakho?

50. How would you store the waste if you are asked to do it?

Ungayigcina njani inkunkuma xa ucelwa ukuba wenze loo nto?

51. Is waste storage a problem in your household?

Ingaba ingxak ukugcina inkunkuma kwikhaya lakho?

52. Which waste has storage problem in your household?

Yeyiphi inkunkuma enengxaki yokuyigcina kwikhaya lakho?

53. What is the problem?

Yintoni ingxaki?

54. In your opinion how can waste storage be improved in your household?

Ngokoluvo lwakho kungaphuculwa njani ukugcina inkunkuma kwikhaya lakho?

3. WASTE DISPOSAL

55. How is a waste disposed in your household?

Ilahlwa njani inkunkuma kwikhaya lakho?

56. In your opinion is this the best disposal method?
    Ngokoluvo lwakho ingaba le indlela yokulahla ingcono?

57. If not what disposal methods would you consider the best?
    Ukuba ngaba ayikho ngcono, iyiphi iindlela yokulahla engcono kakhulu?

58. Why isn't that method practiced
    Kutheni na ukuba londlela ingenziwa?

4. WASTE MINIMISATION- (Re-use, Recycle, Reduce, and Recovery)

Reduce/ avoidance

59. How often does a person in your household take a shopping bag when go shopping?
    Umntu kwikhaya lakho uyisebenzisa kangakanani plastic bag evenkileni xa eyothenga?

60. What do you think of the idea of taking a shopping bag when go shopping?
    Ucinga ntoni na ngoukuthatha ingxowa evenkileni xa uyothenga?

61. How often do you take a shopping basket/bag/container when you go shopping/market?
    Lingakanani uthatha kwibhaskiti yokuthenga / ingxowa / isikhongozeli xa uye ezivenkileni / emarikeni?

Reuse

62. Do you re-use any of the following? Tick which is applicable
    Ingaba-uyazisebenzisa kwakhona ezi zinto zilandelayo? Tikisha into oyisebenzisayo.

	Tick
Plastic bag Ibhegi yeplastikhi	
Plastic bottle container ibhotile yeplastiki	

Glass bottle/jars

Glass ibhotile / iingqayi

Cardboard boxes

ibhokisana zekhadibhodi

Papers

amaphepha

Cloth

indwangu

Aluminium cans

Iingxowa ye Aluminium

Tin cans

iinkonkxa tin

Papers

amaphepha

Food scraps

scraps zokutya

Others: specify?

Okunye: chaza?

63. Do you think waste re-use is appropriate to manage waste?

Ingaba ucinga ukuba ukusebenzisa inkunkuma kwakhona kufanelekile ukulawula inkunkuma?

64. What factors stop you from re-using waste?

Ziziphi izinto ezakuyekisa kwakhona ukusebenzisa inkunkuma?

Recycle

65. Do you know anything about recycling?

Ingaba uyazi ngokujikeleziswa kwenkunkuma?

66. Do you know of any recycling services which are available?
    Ingaba uyazazi na iinkonzo ze recycling ezifumanekayo?

67. Do you use the recycling service (s)?
    Ngaba uyazisebenzisa inkonzo recycling?

68. If yes? What do you recycle?

    Ukuba uthi ewe?Yintoni na iyijikelezisayo?

69. Do you think the recycling service (s) is/are working efficiently?
    Ingaba ucinga inkonzo eyomileyo / zisebenza ngendlela efanelekileyo?

70. If you are not recycling why are you not recycling?

    Ukuba awujikelezisi kutheni ?

71. If the recycling service is available and run efficiently, how eager are you to recycle?
    Ukuba inkonzo yokujikelezisa iyafumaneka kwaye iqhuba kakuhle, uzimisele kangakanani na ukuba uyisebenzise?

Recovery

72. Do you know anything about composting?
    Ingaba wazi ntoni na malunga nokwenza umgquba?

73. Do you compost?
    Ingaba uyawenza umgquba?

74. What do you compost?
    Ingaba uwenza ngantoni umgquba?

75. If taught the proper way to do composting, how eager are you willing to compost?

    Ukuba uyalelwa indlela efanelekileyo yokwenza umgquba, ulangazelela kangakanani ukwenza umgquba?

76. What else do you think can be done to minimise waste?
    Yeyiphi enye into ocinga ukuba ingenziwa ukunciphisa inkunkuma?

Thank you for your time!!!!!!!!

PART 3: OBSERVATION SHEET

STRUCTURED OBSERVATION SOCIAL NORMS AND ATTITUDE TOWARDS SOLID WASTE MANAGEMENT IN KHAYELITSHA FORMAL SETLEMENT

6. Presence of waste containers/bins
   Ubukho kwenkunkuma/izikhongozeli / imigqomo

7. Type of container/bins

   Uhlobo lwemigqomo

8. Neatness of environment (All waste in containers/on the pit)
   Ucoceko lwemvelo (Yonke inkunkuma kwimigqomo/ emhadini)

9. Evidence of sorting
   Ubungqina bokuhlela

10. Innovative disposal
    Ukulahlwa

APPENDIX C: CONSENT FORM

Full title of Project: Effect of social norms and attitudes towards domestic waste
In a selected formal settlement in the Cape Metropole located in the western Cape South African

Aim and Objective of the study

The Primary objectives of the study is to unveil the impact of social norms and attitude of the people of Khayelitsha towards waste minimisation initiatives in Khayelitsha households and to obtain explanations as to why waste minimisation initiatives are underperforming

The aims of the study are:

- To understand the impact of the social norms and attitude towards waste minimisation initiates,
- To establish of the main causes of solid waste mismanagement in Khayelitsha,
- To ascertain whether the householders attitude to recycling are a contributing factors to poor recycling performance,
- To investigate social norms and structural influences towards waste minimisations and
- To identify any changes in waste minimisation intentions which households p

CONSENT FORM

NB: Please note that participation in the study is completely voluntary, if any question causes any discomfort that you do not have to answer it and the interview can be terminated at any stage and if no longer wish to participate. **Please tick in the box below**

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving reason. ☐

3. I agree to take part in the above study. ☐

4. I agree to the interview / focus group / consultation being audio recorded ☐

5. I agree to the interview / focus group / consultation being video recorded ☐

6. I agree to the use of anonymised quotes in publications ☐

Date		Participant Signature
Name of Researcher	Date	Signature

Researcher: Tahulela Aifani
Masters Research student
Cell: 0787023714
Work: 0214603667
Address of Researcher: CRN Canterbury and Constitution,

APPENDIX D: ETHICAL CLEARANCE

Cape Peninsula
University of Technology

P.O. Box 1906 • Bellville 7535 South Africa •Tel: +27 21 6801680 • Email: saliefa@cput.ac.za
Symphony Road Bellville 7535

Office of the Chairperson Research Ethics Committee	Faculty: BUSINESS

At a meeting of the Research Ethics Committee on 03 December 2015, Ethics Approval was granted to AIFANI CONFIDENCE TAHULELA (213250411) for research activities Related to the MTech/DTech: MTech: PUBLIC MANAGEMENT at the Cape Peninsula University of Technology

Title of dissertation/thesis:	Effect of social norms and attitudes towards domestic waste in a selected formal settlement in the Cape Metropole located in the Western Cape, South Africa Supervisor: Prof H Ballard

Comments: See attached comments from reviewers report

Decision: APPROVED

Signed: Chairperson: Research Ethics Committee	03 December 2015 Date
Signed: Chairperson: Faculty Research Committee	Date 03/12/2015

Clearance Certificate No | 2015FBREC312

APPENDIX E: DECLARATION FROM LANGUAGE EDITOR

GRAMMARIAN CERTIFICATE

MELODY KOZAH PROOF READING SERVICES

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7 February 2017

Dear Sir/ Madam

This confirms that I have proof read and edited the research study entitled, '***Effect of Social Norms and Attitudes Towards Domestic Waste in a Selected Formal Settlement in Western Cape South Africa***,' and that I have advised the candidate to make the required changes.

Thank you.

Yours faithfully

MELODY RUMBIDZAI KOZAH
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