UNIVERSITY OF KWAZULU-NATAL

AN EXPLORATION OF CITIZEN'S ATTITUDES TOWARDS WASTE RECYCLING WITHIN THE UMHLATHUZE LOCAL MUNICIPALITY IN KWAZULU-NATAL PROVINCE

By

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ABSTRACT

The success of municipal waste recycling highly depends on the attitudes and participation of individuals as citizens, to separate waste from source. The aim of this study was to explore the attitudes of citizens of UMhlathuze Local Municipality in Kwazulu-Natal, towards waste recycling. Understanding which attitudes shape the behaviour of the citizens with regards to waste recycling is essential for the municipality to achieve waste recycling targets. For this study, the quantitative research approach and combination of stratified, random and convenient sampling method were applied. The research involved 322 respondents from the three suburbs of the uMhlathuze Local Municipality: Meerensee, Aquadene and Esikhawini. The respondents were both male and female above 19 years of age. Data were collected by means of structured questionnaire distributed to the citizens of the 3 selected suburbs of the uMhlathuze Local Municipality. The data collected were analysed using descriptive and inferential statistics. The analysis conducted revealed that there are no statistical significant association between overall waste recycling behaviour and overall recycling attitude among the respondents, both those who separate waste for recycling and those who do not. However, the socio-demographic variables tested revealed that gender, nationality and income category are statistically significantly associated with recycling behaviour. General concern for the environment, culture and beliefs were significant predictors of negative or positive attitudes towards waste recycling. From the analysis, recommendations were made for uMhlathuze Local Municipality: to provide adequate recycling facility to create and sustain a recycling culture, implement penalties to instil recycling beliefs and incentives to motivate citizens. This research might probably guide the management of the municipality to reinforce attitudes, which promote desirable behaviours and overcome the attitudes hampering recycling behaviour among citizens in the municipality.

Key words: citizens; attitudes; recycling behaviour; municipal waste

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CHAPTER 1

INTRODUCTION OF THE STUDY

1.1 Introduction

The recycling of waste has gained increasing attention as a means of protecting the environment since it offers one of the sensible solutions, both economically and ecologically for managing waste in cities and municipalities (Omran, Mahmood, Abdul Aziz, & Robinson, 2009). The success of any recycling activity highly depends on individual participation, as recycling requires at least one household member to collect, sort, store and in some cases, transport waste materials to recycling centres (Bruvoll & Nyborg, 2002).

This study was conducted in uMhlathuze Local Municipality (ULM), situated in the north-east coast of the province of KwaZulu-Natal, about 180 kilometers north-east of Durban. UMhlathuze Local Municipality is a largely rural municipality, with few major towns like Richards Bay and Empangeni, with 86 609 households, of which 58% of these resides within tribal areas, followed by 39% which resides in urban areas and 3% resides in farm land (IDP, 2017). ULM provides waste management services to an average of 77% (66 688) of the households in the municipality. It is noteworthy that ULM incorporates Richards Bay (Aquadene, Arboretum, Birdswood, Brackenham, Meerensee,Veldenvlei, Wildenweide.), Empangeni, eSikhaawini, Ngwelezane, eNseleni, Felixton, Vulindlela, Bhuchanana and Heatonville, as well as the rural areas under Traditional Councils namely Dube, Mkhwanazi, Khoza, Madlebe, Somopho, Obuka and Obizo.

Globally, countries are faced with waste management challenges due to increase in the waste materials produced daily (Frazier, 2015). On the other hand, an increase in waste generation results in the landfills reaching their full capacity within a very short space of time (Chisadza, 2015). Guerrero, Maas, and Hogland (2013) indicate that municipal waste management is even more challenging for developing countries, mainly due to the lack of resources such as equipment, human resource and the poor allocation of funds.

The recycling of waste has been identified as the solution to the challenges of waste management in many municipalities such as ULM (Oke & Kruijsen, 2016; Omran et al., 2009). According to Oke and Kruijsen (2016), recycling has been given more attention since the large portion of waste sent to landfills can be been given to waste recycling. The increasing scarcity of resources, coupled with the exponential increase in the global population, has also compelled the need for recycling of waste that is generated. However, it has been noted that the attitudes of waste generators is critical to the success of any waste recycling program (Bolaane, 2006).

According to Van der Merwe, Lombard, Lombard, and Lombard (2009), recycling means the collection of materials, sorting, reprocessing and manufacturing into new items. Therefore, it requires considerable effort, a lot of time, attention and more importantly, it is an individual voluntarily action. A study conducted in Nigeria by Otitoju (2014) indicated that the attitudes of waste generators in the municipality are critical, as they play a significant role in providing answers to municipal solid waste management problems. Anderson, Romani, Wentzel, and Phillips (2013) highlighted the factors that are directly related to the attitude of people towards recycling, which includes their level of education, how much they know about the environment, its values and the need to protect those values.

Practices and penalties reinforced in a society shape the behaviour of people regarding waste collection and sorting behaviours. For example, in 2011, Germany was reported to be the highest European country with 62% of its waste being recycled because of a system which shapes the behaviour of its citizens (Žmak & Hartmann, 2017). The dual system also known as the Green dot was introduced in German since 1991. In this system, households receive a yellow bag for all waste with green dot. The winning strategy for Germany is that the separated waste (paper, organic and plastic waste) is not charged and if the household fails to separate the waste correctly, the waste collection does not take it away. More importantly, households that do not separate waste correctly are forced to pay a penalty.

Similarly, Japan has taken hold of the 3 R's (reduce, reuse and recycle) concept as the Ministry of Environment stated their intent on becoming a zero waste society (Frazier, 2015). In this regard, becoming a zero waste society entailed the promotion of the 3Rs, such as separated collection, reduction of waste through separation and composting (Frazier, 2015). With the above national intent, Japan's citizens follow very strict recycling guidelines at home. It is

noteworthy that waste is picked up on a daily basis and trash is separated, while most of it is recycled (Olmsted, 2007). Citizens identify recyclables including cans and bottles, which they rinse out before being placed in the garbage, again to avoid attracting pests. In this way, residents are responsible for sorting their waste and for peeling off labels from bottles and containers (Olmsted, 2007).

The study by Mavropoulos and SA (2009) on recycling behaviour focused on brain and a framework to understand personal differences in recycling and concluded that recycling success differs between developed and developing countries. In developed countries, recycling behaviour is linked with moral values and social responsibility, whereas in developing countries, it is usually linked with survival and daily income. As stated above, studies conducted by Abila and Kantola (2013), as well as Otitoju (2014) in Nigeria, indicated that waste recycling is conducted by informal recyclers for income purpose.

South African citizens still lack the technical knowledge on waste recycling. A study in South Africa was conducted in uMkhanyakude and Zululand district municipalities, in KwaZulu-Natal. The study aimed at assessing the residents' opinions and perceptions on the effectiveness of waste management and recycling potential. The findings of the study revealed that 97% of respondents lacked the technical knowledge on waste recycling. Furthermore, the findings also revealed that progress towards integrated waste management is very limited in the rural municipalities because the municipalities are more preoccupied with the need to increase the accessibility of waste management services to the arears not serviced, rather than investing in the infrastructure for successful waste recycling programs (Dlamini, Rampedi, & Ifegbesan, 2017).

Likewise, Kamara (2009) conducted a study at Tshwane Metropolitan in South Africa, about household participation in municipal waste disposal and recycling. It was discovered that there was a low level of household awareness about the environmental implications of domestic waste management, hence, there was low level of participation in domestic waste sorting, disposal and recycling from the citizens.

The survey conducted by CSIR (2011) indicates that two-thirds of the more than 2 000 urban South African households surveyed did not know where to dispose of their household

recyclables. The survey was aimed at understanding post-consumer recycling behaviour in South Africa. According to the survey:

- More than 73% of South Africans living in urban areas reported no recycling behaviour at all;
- About 27% of urban South Africans reported some recycling behaviour; and
- Only 3.3% of the respondents indicated that they sort most or all recyclables materials from their household waste.

The survey results also highlighted an overall negative attitude towards recycling of which was because of the lack of space, lack of time, because it is dirty or untidy and inconvenient recycling facilities.

UMhlathuze Local Municipality IDP (2017) reflects that 21% of recyclable waste has been diverted from the landfill. These percentages of the recyclable waste were achieved via drop offs located in Meerensee, Essenwood, Esikhawini, Ngwelezane and Mzingazi. Also, uMhlathuze Local Municipality implemented two bags system in two suburbs located in Richards Bay, namely Meerensee and Birdsdwood. Households are supplied by the municipality with two colour coded bags, black being for non-recyclable waste and yellow bag for recyclable waste, to differentiate waste to be taken to landfill site which are black bags and the waste to be transported to the material recovery facility (MRF) yellow bags.

In terms of collection, the rear end loader collects the non-recyclable waste in black bags. Bush trucks collect the yellow bags filled with recyclable waste. The yellow bags are taken to the MRF located in Alton industrial area in Richard Bay. The recyclables from yellow bags are then further sorted into different categories as per respective end user, that is, cans, plastics, papers or bottles. However, the challenge faced by the municipality is that there are still households that use the yellow bags for non-recyclable waste (CSIR, 2014).

1.2 Motivation of the study

Citizens of municipalities have attitudes which shape their behaviour regarding waste recycling. However, the attitudes of citizens are often not used as a basis of individual behaviour change regarding waste recycling, or as a starting point to inform waste management

programs and policies. In South Africa, the municipal Waste Management Office (WMO) has a mandate in terms of the National Environmental Management Waste Act of 2008 to coordinate matters pertaining to waste management in a municipality. For this office to succeed, it is valuable that the WMO understands which attitudes shape the behaviour of citizens regarding waste and recycling. This is helpful as effort can be directed at reinforcing attitudes which promote desirable behaviours, but also come up with ways to overcome or change the attitudes impeding recycling behaviour and practices among citizens in the municipality.

Additionally, many sustainable waste recycling programs in municipalities are developed without clear understanding of what are the enablers and barriers to citizens from practicing desirable waste disposal and recycling behaviour. With a focus on the attitudes of citizens regarding waste recycling, this study will assist municipal leaders by providing insights into how attitudes shape waste and recycling behaviour of citizens in a municipality, in South Africa.

1.3 Focus of the study

Waste management is increasingly becoming a key challenge in municipalities, in South Africa. It is important to also note that the focus on waste management has also increased because of the implementation of Waste Act (Act 59 of 2008) in South Africa. As there are many options regarding waste management, it is critical to highlight that this study focuses on the attitude of citizens towards waste recycling at an individual level.

Attitudes reflect three components. Firstly, they depict how people feel or are emotionally attached to recycling (Conner, McEachan, Taylor, O'hara, and Lawton (2015). Secondly, they also show how one is inclined to act towards waste recycling. Thirdly, attitudes also show what a person thinks about waste recycling. In light of the above, this study does not focus on the emotional, but rather the cognitive and behavioural aspects of attitude upheld by citizens towards recycling in UMhlathuze municipality, located in KwaZulu-Natal.

1.4 Problem statement

Previous studies regarding waste in South Africa have focused on a variety of issues. These include a focus on household participation in municipal waste disposal and recycling, practices of waste recycling by companies who are waste generators, alternative waste management techniques to divert waste from landfill, knowledge and awareness of waste recycling (Chetty, 2016; Chisadza, 2015; Kamara, 2006).

It is noteworthy that the South African Constitution (Act No. 108 of 1996) and Municipal Structures Act (Act No. 117 of 1998) assert that waste management service delivery is a local government function. Therefore, the local municipality has a responsibility to provide waste management services, including waste removal, waste storage and waste disposal services. However, local municipalities are faced with challenges arising from an increase in waste generation, which results in landfills reaching their full capacity within a very short space of time (Chisadza, 2015). Waste recycling has been identified as the solution to divert waste from landfills (Oke & Kruijsen, 2016; Sidique, Lupi, & Joshi, 2010). Also, in South Africa, the need to increase recycling has also been driven by the implementation of the National Environmental Waste Act (Act No. 59 of 2008 (NMWA). NMWA requires local municipalities to prepare and implement waste management plan of which includes how a local municipality intends to provide for recycling of waste (DEA, 2008).

According to Bruvoll and Nyborg (2002), and Sidique et al. (2010), municipal waste recycling highly depends on the participation of individuals as citizens who do not only generate waste, but also collect, sort, store and also transport waste materials to recycling centres. The role of the citizens as agents in the chain of recycling is very key in local council waste services such as in uMhlathuze Local Municipality. As citizens are key players, it is important to explore and understand their attitudes as they are critical for the success of a recycling program in a local municipality. Like many local municipalities, uMhlathuze Local Municipality implemented various recycling and waste reduction programs such as source separation, curb side recycling and drop off recycling programs (Sidique et al., 2010). According to Lakhan (2015), for recycling programs to succeed, the attitudes of the citizens towards waste recycling are important. Furthermore, the need for research on these attitudes regarding waste is compounded by the fact that the concept of waste recycling is mostly new in developing countries such a South Africa and Nigeria.

Like all other local municipalities, uMhlathuze Local Municipality has set goals to achieve its waste recycling via its integrated waste management plan. Goal 5 of the UM Integrated Development Plan 2017/2018 is to achieve Integrated Waste Management (IDP10, 2017). However, the achievement of the goal of waste recycling highly depends on individual participation. Currently, uMhlathuze Local Municipality does not know the attitudes of citizens towards waste recycling. In this regard, the current study is significant to inform not only the municipal leadership, but also the citizens, on how a change in attitudes by citizens of uMhlathuze Local Municipality towards waste recycling is very critical.

1.5 Aim of the study

The aim of the study is to explore the attitudes of citizens of UMhlathuze Local Municipality in KwaZulu-Natal, towards waste recycling behaviour.

1.6 Research objectives

With the above aim in mind, the following are the four objectives for this study.

- To identify the attitudes of citizens living in uMhlathuze Local Municipality in KwaZulu-Natal, towards waste recycling behaviour.
- To describe how attitudes of the citizens living in uMhlathuze Local Municipality in KwaZulu-Natal affect their behaviour in favour or against waste recycling.
- To establish the linkage between the attitudes of individuals and their behaviours as citizens of uMhlathuze Local Municipality in KwaZulu -Natal
- To recommend to the municipality, on how the attitudes of citizens of uMhlathuze Local Municipality in KwaZulu-Natal can be changed to enhance behaviour of waste recycling.

1.7 Research questions

The research questions for this study include the following:

- What are the attitudes of citizens of uMhlathuze Local Municipality in KwaZulu-Natal, regarding waste recycling?

- How does the attitude of citizens of uMhlathuze Local Municipality in KwaZulu-Natal, positively or negatively influence recycling?
- What is the linkage between the attitudes of individuals and their behaviours as citizens of uMhlathuze Local Municipality in KwaZulu-Natal?
- In what ways can the attitudes of citizens of uMhlathuze Local Municipality in KwaZulu-Natal be changed to enhance behaviour of waste recycling?

1.8 Delimitation of the study

Delimitation of a study reflects aspects which will not be the focus of the study.

- Waste recycling in the municipal context is broad and includes a variety of people such as municipal workers working as waste collectors. Industries and citizens are also waste generators. However, this study only focuses on citizens and not industries. In this way, the aim of the study is to establish the attitudes of citizens towards waste recycling in a local municipality.
- This study does not assess the knowledge of citizens about recycling. However, this is not to suggest that attitudes are formed without knowledge about recycling. The study focuses on the attitudes and behaviours, rather than knowledge alone, without what is done with it.

1.9 Chapter summary

This dissertation has six chapters which are subdivided as follows:

Chapter 1: Introduction

This chapter presents the background to the study, it delineates the research problem, the objectives and research questions of this study. It also contains the layout of the study.

Chapter 2: Literature Review

This chapter reviews literature regarding recycling, attitudes and recycling behaviours. The main focus of this chapter is the conceptualisation of attitudes towards waste recycling behaviour.

Chapter 3: Research Design and Methodology

The research methodology chapter depicts the methodology employed to explore the citizen`s attitudes towards waste recycling. It also focuses on the research design and sampling procedure, data collection, data analysis and ethical considerations pursued in this study.

Chapter 4: Results

This chapter presents the findings of the study.

Chapter 5: Discussion

This chapter discusses the findings of the study in relation to empirical studies, literature and relevant theories.

Chapter 6: Conclusion and Recommendations

In this chapter, concluding remarks and recommendations are drawn from the findings.

1.10 Conclusion

This first chapter deals with the introductory part of the study. Here, the chapter bestows an overview of the problem under investigation, the aim and objectives of the study. An outline of the study as whole is also given. The subsequent chapter focuses on literature review pertaining to the concept of recycling, attitudes and behaviours.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The aim of this chapter is to critically review literature with regards recycling, attitudes and recycling behaviour. The main focus of this chapter is to conceptualise attitudes and waste recycling behaviour as key concepts of the study.

In pursuing the above aim, the chapter starts by focusing on the concept of waste recycling before understanding how recycling is undertaken in municipal settings. Thereafter, the chapter reviews the concepts and theories of attitude and behaviour change. Lastly, the chapter discusses previous studies on waste recycling and their contribution to current state of knowledge.

2.2 Waste recycling

To understand waste recycling, it is important to understand the meaning of this concept, but also priority order for waste management options based on assumed environmental impact.

2.2.1 Understanding the meaning of waste recycling

First and foremost, it is key to reiterate that waste management in South Africa is governed by the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008), which came into effect on 1 July 2009. The said Act defines waste "as any substance, material or object that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered" (DEA, 2014). Likewise, Oke and Kruijsen (2016) describe waste as the by-product of human activities, particularly resource-intensive and consumer-based economic lifestyles and often

disposed of in landfills. Similarities of the two definitions of waste is that waste may be resource intensive, meaning that it may consist of objects that can be re-used, recycled or recovered, however, it is often disposed of in landfills. Notably, large portions of the waste sent to landfills include materials that could possibly be recycled.

On the other hand, due to the increase in the amount of waste which needs to be processed and due to the shortage of space as landfills are reaching their life span within a very short space of time, more attention has been given to recycling (Oke & Kruijsen, 2016). Another reason for diverting waste away from landfill are the greenhouse gases. According to Couth (2010) and Trois and Jagath (2011), Greenhouse gas (GHG) emissions per person from urban waste management activities are greater in sub-Saharan African countries than in other developing countries. Mindful of this problem, the Clean Development Mechanism (CDM), from the 1997 Kyoto Protocol has been a vehicle to initiate projects to control GHG emissions in Africa (Couth et al., 2010).

It is key to highlight that recycling has been defined differently by different authors to suit different contexts. For example, Oke and Kruijsen (2016) define recycling as material reprocessing involving physical, chemical, mechanical and thermal processes to derive initial or other products. Similarly, EAP (2017) define recycling as the process of collecting and processing materials that would otherwise be thrown away as waste and turning them into new products. However, the EAP definition further includes collection. According to EAP (2016), recycling is the recovery of useful materials such as paper, glass, plastic, metals from waste to be reused to make new products, thereby reducing the amount of virgin raw materials. Whereas, according to Merwe et al. (2009), recycling means the collection of materials, sorting, reprocessing and manufacturing into new items. This definition incorporates all contexts in which the definition of the word recycling could be used. Thus, several studies referred to recycling as a method of diverting the amounts of municipal waste from landfills (Corvellec, 2016; Zen & Siwar, 2015) . The next section discusses waste hierarchy, focusing on the priority order in a variety of options for waste management.

2.2.2 Waste management hierarchy

Waste hierarchy is commonly described as a priority order for waste management options, based on assumed environmental impacts. The waste management hierarchy (Figure 2.1) has been implemented by different countries as an influential philosophy in waste and resource

management that prioritise practices ranging from waste prevention to landfill (Van Ewijk & Stegemann, 2016). The waste management hierarchy is an approach implemented by municipalities to manage waste more sustainably (Van de Merwe et.al, 2010). According to Van Ewijk and Stegemann (2016), in Europe, waste hierarchy was formulated by former scientist and Dutch politician, Ad Lansink, who proposed it in Dutch Parliament in 1979, which was followed by a community strategy for waste management. In this hierarchy, prevention is the first guideline, while waste that could not be prevented is best recycled or reused. The hierarchy is also clear that waste that could not be recycled or reused ought to be disposed. This effectively suggests a three-tier (reduce, recycle, reuse) waste hierarchy (Van Ewijk & Stegemann, 2016). Europe had a strong influence on the recycling system in South Africa (DEA, 2012).

Waste management hierarchy was introduced in South Africa in 1999, by the National Waste Management Strategy (NWMS). Otherwise, the initial waste management was just the basic waste management which was cleansing function that includes waste storage, collection, transport and environmentally acceptable disposal (Muzenda, Ntuli, & Pilusa, 2012). The NWMS was revised in 2010 to give effect to the objective of the Waste Act, which is to protect the health, well-being and the environment by providing reasonable measures (DEA, 2012a; Muzenda et al., 2012).

Integrated waste management approach became mandatory with the coming into effect of the National Environmental Management Waste Act (2008) in South Africa. In this approach, South Africa supports cleaner production, waste minimisation, re-using, recycling and waste treatment. Disposal and remediation are regarded as last options of waste management (Strydom & Godfrey, 2016).

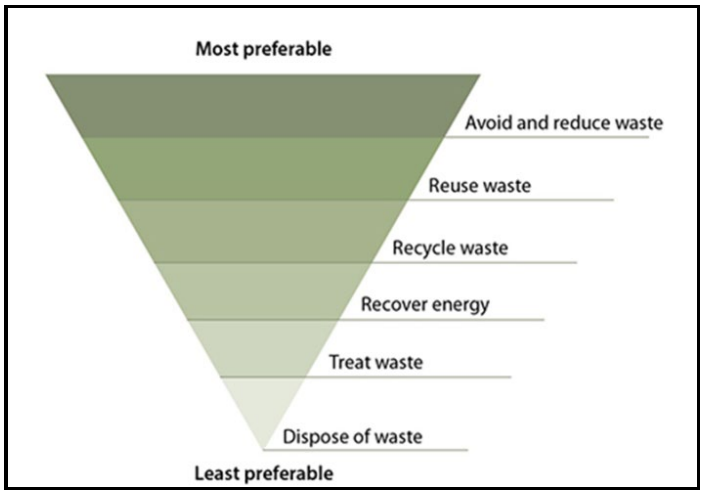

Figure 2.1: Waste Management Hierarchy

Adapted from National Waste Management Strategy (2011:18)

The above diagram represents what are considered as the preferred methods of waste management on one hand, and the least preferred methods, on the other. Each of the options depicted in the waste management hierarchy is discussed below.

Waste avoidance and reduction: is the most preferred option for waste management measures. The waste avoidance and reduction aims to achieve waste minimisation and therefore reduce the amount of waste entering the waste stream (Muzenda et al., 2012). This is currently more enforced by industries to find processes that do not generate waste.

*Recovery, re-use and recycling***:** constitutes the second step of the waste management hierarchy. This has the aim of reclaiming material from the waste stream, thus reducing the volume of the waste generated (Muzenda et al., 2012).

*Treatment and disposal***:** is the final and the least desirable option in the hierarchy, due to the negative impact on the environment.

The waste management hierarchy has the potential to provide municipalities a range of options in how to manage waste with clarity on negative, but also positive consequences.

2.2.3 Waste recycling in the municipal context

It is a regulatory responsibility for municipalities in South Africa to provide waste management services, including waste removal, waste storage and waste disposal services, in line with

National Environmental Management Waste Act of 2008 (Act, 1996; CSIR, 2011). However, municipalities are faced with the challenges of increasing urban waste generation, due to people moving from rural areas to the manufacturing hubs in cities to seek jobs (Godfrey & Oelofse, 2017). This increase in waste generation results in the landfills reaching their full capacity within a very short space of time. Also, the implementation of Waste Act in South Africa has put pressure on municipalities to adhere to the waste hierarchy methods of waste management.

To comply with the waste act and to reduce the amount of waste entering landfills, various municipalities have implemented various recycling and waste reduction programs such as source separation, curb side recycling and drop off recycling programs (Sidique et al., 2010). Lakhan (2015) asserts that incentives are also designed to encourage diversion of waste away from landfills.

2.2.3.1 Source separation

Municipalities in both the developed and developing countries have resorted to setting up source separation schemes such as multi-stream collection (Guerrero et al., 2013). In multi-stream collections, citizens are required to separate their waste prior to collection by placing recyclables in two or more separate bins, for example, separate bin for papers, plastics or cans. Then a multi-stream vehicle with separate compartments for each bin collects and transports the recyclables to the material recovery facility (MRF), where recyclables are bailed for shipment to the end user manufacture (Lakhan, 2015; Otitoju, 2014). For example, Ontario province in Canada has implemented source separation programs to divert municipal waste from landfills and significant amount of waste has been diverted. In this regard, Ontario citizens are asked to place all eligible recyclables in a designated bin provided by the municipality. These are then collected by a collection vehicle which transports the recyclables to MRF (Lakhan, 2015). Similarly, a study conducted by Jenkins, Martinez, Palmer, and Podolsky (2003) focused on the determinants of household recycling to reveal that curb side recycling had a significant and substantial positive effect on the percentage of specific waste recycled. This study illustrates that curb side program has success if households' cost of recycling is reduced by making recycling more convenient and less time consuming (Jenkins et al. 2003).

It is notable that the City of Johannesburg Municipality in South Africa runs pilot projects on source separation in selected communities via *Pikitup*, which is an integrated waste service provider for the City of Johannesburg (Chisadza, 2015). In this programme, households are issued with black wheelie bin for non-recyclable materials, black wheelie bin with a green lid

for garden waste such as grass cuts and leaves, a clear bag for all recyclable waste such as cans, plastics and glass bottles, and an orange bag for paper and cardboard. Also, food for waste program was implemented to encourage recycling from the low income citizens, whereby households exchange recyclables for food parcels (Chisadza, 2015). Findings of the study conducted by Chisadza (2015) indicated that waste diverted from these arears were below the waste reduction targeted. Thus, conclusion was made that separation at source depends on the mechanisms employed to instil a culture of recycling and improve awareness and education on waste related issues. Therefore, resources alone do not convince citizens to recycle.

ULM implements a source separation only in two suburbs Meerensee and Birdswood. According to CSIR (2014), the program is not yet effective as there are still households which use the yellow bags for non-recyclable waste such as kitchen waste.

2.2.3.2. Curb side recycling

After the source separation, municipalities collect waste from households by means of curb side collection, which is a service provided by the municipalities to collect waste containers along the road with a prescribed container (Zen & Siwar, 2015). Curb side recycling can either be multi stream or single stream recycling. Single stream recycling is a system in which a household places recyclables in a single commingled container for site separation. This material is then collected together in specially configured recycling trucks and transported to a single stream Material Recovery Facilities (MRF) (Lakhan, 2015). Multi-stream recycling is a collection method in which waste generators are required to source separate recyclables into two (or more) separate bins (generally, paper is placed in one container and plastics, cans and glasses in separate containers). Multi-stream collection vehicles usually have separate compartments for each bin, collect and transport recyclables to a multi-stream MRF that is specially configured to sort and process source separated recyclables (Lakhan, 2015).

A study by Lakhan (2015) compared single and multi-stream recycling in Ontario in Canada and revealed that single collection is more expensive than multi-stream recycling due to cost mechanism to separate the waste. However, the multi-stream collection reduced the level of household participation as households are expected to place recyclables in separate bins. Whereas the single stream recycling systems is more convenient for households to place all recyclables in one bin (Lakhan, 2015).

2.2.3.4. Drop-off recycling

Drop-off recycling is whereby designated sites are established to collect a range of recyclables and usually, the recyclers themselves are required to deposit the sorted recyclables in specially marked containers. Drop-off recycling centres are less costly to operate, as compared to curb side programs (Saphores, Nixon, Ogunseitan, & Shapiro, 2006). Drop-off centre operators are able to save on labour and transportation costs because these costs are transferred to the recyclers (Sidique et al., 2010).

2.2.3.5 Buy-back centres

Buy-back centres (BBCs) are depots where waste collectors can sell their recyclable waste. BBCs play a crucial role in facilitating the recycling potential of these informal sector participants (Viljoen, Blaauw, & Schenck, 2012). According to Bolaane (2006), with the use of BBCs, the public is biased towards separating materials for recycling that have known markets and are of significant financial value. Many unemployed people earn some income collecting and selling recyclable goods on an informal basis (Viljoen et al., 2012).

BBCs rely heavily on waste collected by individual waste collectors. For this reason, the location of their site is important. The BBCs should however be careful not to inconvenience the people, residents or businesses in the immediate vicinity of the BBCs (Viljoen et al., 2012).

2.2.3.6 Incentives

The study by Bolaane (2006) conducted in Gaborone, the largest city of Botswana, found that even though the citizens are aware of recycling, municipalities are still faced with challenges of citizens' participation in the recycling initiatives. The study further concludes that while citizens' education is important to raise awareness and enhance citizens' participation in recycling, it must be complemented by direct incentive targeted to the participating citizens (Bolaane, 2006). According to Holmes, Fulford, and Pitts-Tucker (2014), incentives can be in any of the two categories namely rewards or charges. Rewards incentive examples are vouchers given directly to the household in respect of their recycling performance. Charges for disposal of waste based on either volume or weight or collection frequency are also widely used to incentivise better recycling performance (Holmes et al., 2014).

Pay As You Throw (PAYT) is widely used as an example of charges for disposal. With PAYT, a user customised system is used. The customised system uses identification systems such as smart card which provides municipality and citizens with a virtual identity and stores relevant data. The system uses a digital scale to determine the weight of the recyclables and transmits the output to a web server (Aravossis, Nikolaidou, & Fountzoula, 2015) .

PAYT has been viewed to offer best prospect of cost-effectively incentivising residents to reduce their set-out of residual waste and increase recycling (Manni & Runhaar, 2014; Wahabu, Oduro-Kwarteng, Monney, & Kotoka, 2014). However, the success of voluntary incentive schemes such as PAYT appear to be a good technique for raising awareness of recycling activities and do little to improve performance through the incentive offered (Holmes et al., 2014) . On the other hand, a study on the effect of unit-based garbage pricing on Dutch municipalities criticized PAYT as a burden to citizen, as citizens pay based on the quantities of the waste they dispose (Allers & Hoeben, 2010). Thus, PAYT is seen to encourage illegal dumping, because those who are not sending their waste for recycling will have large quantities of waste and they rather discard it illegally than paying for it (Allers & Hoeben, 2010; Brown & Johnstone, 2014). Therefore, any municipality implementing this system must have stringent laws to enforce compliance. A study conducted by Holmes et al. (2014) for the Department for Environmental, Food and Rural (Defra) in UK, investigating the impact of recycling incentive schemes, revealed that penalties have greater effect than financial incentive schemes because people seem to be more responsive to schemes where they strive to keep the money already in their pocket, rather than attempting to win some cash reward. Germany seems to agree with this concept, as 50% of municipalities in Germany has implemented PAYT system and households pay penalty for not separating waste correctly (Aravossis et al., 2015). Currently in South Africa, there are no records of municipalities implementing this system.

2.2.4 Waste recycling in developed countries

This section reviews studies conducted on waste recycling internationally, to establish the status of recycling in both the developed and the developing countries.

Germany implements the dual system known as the green dot, whereby households are issued with yellow bags for all waste streams with green dot and black bags for waste for landfill disposal. The green dot system was implemented since 1991, where all the waste materials

with green dot are recyclable materials (Žmak & Hartmann, 2017) .This system has been noted to be effective for Germany as in 2011, 62% of recyclable waste was diverted from the landfills.

The Malaysian government incorporated and emphasised waste minimisation by encouraging reduce, reuse, recovery and recycle on the 9th Malaysian plan of 2006 -2010 (Babaei et al., 2015). Furthermore, the Malaysian government launched several recycling campaigns to encourage waste recycling culture (Zainu & Songip, 2017). However, a survey conducted in Malaysia to 17000 respondents revealed that only 68.8% of the respondents are committed to putting recycling in to practice, but 99 percent of the respondents was aware of waste recycling. A study conducted by Jekria and Daud (2016) aimed to determine recycling behaviour among the households of Selangor in Malaysia and concluded that environmental concern is a potential variable in influencing the decision to recycle.

In China, the residents volunteer to participate in the source-separated collection. Waste segregation is not common practice in China, it happens through the effort of waste pickers. The recyclable materials from daily use are often collected at the source by scavengers and reusable waste collectors patrolling the residential areas. The residents sell their recyclables to buyers who call door-to-door or sometimes deliver recyclables to the service sites themselves (Zhang, Tan, & Gersberg, 2010). Unlike in the developed countries where the collection of recyclables is included within the system for municipal solid waste management, municipal government collect and transport the recyclables together with municipal waste, in China, recyclables and MSW are treated separately (Zhang et al., 2010). In China, recycling plastic bottles and recycling in general, is much more of an economic imperative, rather than an environmental one.

Many cities and solid waste districts throughout the world are setting new, ambitious goals for higher recycling, waste recovery rates and even targeting zero waste as an attainable goal (Michigan, 2016).

2.2.5 Waste Recycling in developing countries

A study by Guerrero et al. (2013) in developing countries such as Kenya in Africa revealed a variety factors which hamper the development of waste separation programs at the municipal level. These include limited knowledge on technologies and good practices for waste management, lack of equipment for the collection of sorted materials and the absence of

decision makers interested in environmental issues. Similarly, Matete and Trois (2008), as well as Asase, Yanful, Mensah, Stanford, and Amponsah (2009) agree that the factors affecting the environmental aspect of solid waste management in developing countries include the lack of environmental control systems and the evaluation of the real impacts. Ekere et al. (2009) proposed that the involvement of the population in active environmental organisations is necessary to have better systems (Guerroro & Hogland, 2013).

According to Din and Cohen (2013), a large amount of municipal waste in Africa still piles up on the spot, in trenches, ditches, river banks and road sides. Furthermore, waste burns in open air or drift by the river flow or the heavy rains. In developing countries, waste collection problems contribute to the low levels of recycling, as compared to developed countries (Nwokedi, 2011).

In Lagos, Otitoju (2014) concluded that waste recycling is still a challenge because it is only carried by the informal sector. This was confirmed by Abila and Kantola (2013) who concur that waste in Nigeria is recycled informally by scavengers who go to legal and illegal dump sites in search of materials that can be re-used and recycled. Godfrey and Oelofse (2017) also noted a similar pattern of informal recycling taking place in South Africa. Overall, the collection of paper and packing recyclable in South Africa has grown from 41.6% in 2007 to 57.1% in 2015. This paper and packaging collection rates have increased with no separation at source in place across South African cities and towns. Godfrey and Oelofse (2017) further indicate that these levels of recycling are in line with many developed countries, but it has been largely due to an active and growing informal waste sector in South Africa.

According to Otitoju (2014), waste recycling does not receive adequate attention from the government and waste management authorities. Thus, citizens participate in informal recycling for income purposes.

Waste management practices in South Africa are predominantly governed by landfilling, which, due to the lack of suitable space, needs to be faded out in time. Therefore, the country is still at the start of a transition towards green waste management, which if prepared well, will provide ample opportunity to contribute both to the economy and environment, making cities a better place to live and do business in (Oyekale, 2011).

The analysis conducted in Tshwane Metropolitan area showed that there is a low level of household awareness about the environmental implications of domestic waste management

(Kamara, 2009). The low levels of awareness on the implications of waste affect participation in domestic waste sorting, disposal and recycling (Kamara, 2009). A study by Swanepoel (2011) in Grahamstown, on solid waste management revealed that many household residents in South Africa do not recycle because they do not know where recycling centres are, or what to do with the recyclables.

While the City of Johannesburg identifies new interventions to divert waste from landfills by various methods, such as separation at source, alternative treatment methods and the conversion of waste to energy, it is noted that progress has been slow (Chisadza, 2015).

2.3 Exploring the concept and theories of attitudes

As waste recycling is not part of what some people were brought up to do naturally, it is vital to understand how people form or change attitudes regarding waste. It is for this reason that this section focuses on the concept of attitudes**.**

2.3.1 Attitude

The concept of attitude has gained importance in psychological studies because of its influence over an individual's social behaviour (Crisp & Turner, 2014). Katz (1960) define attitude as the tendency of an individual to evaluate object or aspects of his world in a favourable or unfavourable manner. On the other hand, Banaji and Heiphetz (2010) define attitude as the mental and neural state of readiness, organised through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related. Abidin, Ibrahim, and Akiah (2011) define attitudes as the evaluative reactions to persons, objects and events. This includes their beliefs and positive and negative feelings about the attitude object.

The Bananji and Heiphetz definition focuses on mental state, whereas Katz (1960) and Abidin et al. (2011) definition focuses on a person's evaluation of an object or an event. For the purpose of this study, the later definition will be adopted as the definition of attitude. The study explores the evaluative reaction of the citizens of the uMhlathuze Local Municipality towards waste recycling.

According to Abidin et al. (2011) attitude is categorised according to the ABC model which refers to Affective, Behavioural and Cognitive (Abidin et al., 2011). The affective component

of the attitude refers to how people feel about certain attitude objects. It includes a person's positive and negative feelings towards the object. This includes being emotionally attached to recycling and when someone sees a person not recycling, he or she feels being offended. Therefore, the affective component of an attitude can reflect how much one likes or dislikes waste recycling.

Conner et al. (2015) suggest that interventions targeting affective attitudes might be particularly influential in changing behaviours due to its' significant direct effects and indirect effects via intentions.

The behavioural component of the attitude determines how a person acts towards an attitude object. Behavioural component refers to persons' behavioural intentions, or how a person acts according to the attitude that we have. Basically, it refers to how one is inclined to act towards waste recycling. The last one, the cognitive component of an attitude includes thoughts and ideas about the attitude object. Therefore, this component refers to how or what a person thinks about waste recycling.

For the purpose of this empirical study, it is vital to underscore that the emotional aspect of attitude is not the focus. This is because the objective of this study is not assessing the emotional attachment of individuals towards recycling, as the study is not investigating how citizens feel about recycling. On the other hand; the fundamental focus of the study is the behavioural component, as well as the cognitive component of an attitude. The behavioural aspect is significant in this study because the objective of this study is to link the citizens' recycling behaviour and their attitude towards waste recycling. Furthermore, the cognitive aspect is selected because of the need to establish what citizens think about waste recycling, which may either contribute to positive or negative recycling behaviour.

2.3.2 Theories of Attitude

This section discusses two theories of attitude, namely the functional and the social judgement theory, as a basis to understand how people form attitudes regarding waste recycling. Thereafter, the section focuses on how attitudes are formed and maintained**.**

2.3.2.1. Functional theory

The old, but relevant theory by Katz's (1960) takes the view that attitudes are determined by the functions they serve for people. People hold certain attitudes because these attitudes help them achieve their basic goals. Katz's theory distinguishes between four types of psychological functions that attitudes meet, instrumental, knowledge, value-expressive, ego-defensive (Carpenter, Boster, & Andrews, 2013).

Instrumental function: According to this theory, instrumental function asserts people to develop favourable attitudes towards things that aid or reward them (Carpenter et al., 2013). Thus, people want to maximise rewards and minimise penalties. An example is the Pay As You Throw (PAYT) system for recycling of waste. PAYT incentivises residents in that when they reduce residual waste and increase recycling, they end up paying less for the residual waste.

Knowledge function: In terms of the psychological function of knowledge, attitudes provide meaningful, structured environment (Carpenter et al., 2013). According to Carpenter et al. (2013), in life, people seek some degree of order, clarity and stability in their personal frame of reference. Also, Heider (1958) indicates that to hold a particular knowledge can also help people to organise and predict their social worlds, providing a sense of meaning and coherence to their lives.

Value-expressive as a psychological function of attitude relates to express basic values which reinforce self-image (Carpenter et al., 2013). Sometimes a person may develop an attitude that expresses values that are important to them. For example, a person may develop a waste separating habit that has been practiced by his or her mother as very important value.

Lastly, ego-defensive is another psychological function characterised by attitudes, which serves to protect one from acknowledging basic truths about himself or herself, or the harsh realities of life. Therefore, these attitudes are formed to satisfy ego-defensive psychological needs to help people protect themselves from acknowledging threatening self-truths, enabling them to maintain a positive view of themselves.

2.3.2.2 Social judgement theory

The social judgment theory was originally formulated by Sherif and Hoveland. This theory attempts to explain how existing attitudes produce distortions of attitude related objects and how these judgments mediate attitude change. According to this theory, the person's initial

attitude on an issue provides a point of reference against which he evaluates other opinions (Kaplan, 2013).

Social judgement theory has become a widely used, systems-oriented perspective for analysing human judgement in specific ecological circumstances. Judgements are assumed to result from the integration of different cues or sources of perceptual information from the environment (Kaplan, 2013).

2.3.3 The formation and maintenance of attitude

According to Crisp and Turner (2014), there are four ways in which attitudes can be formed, namely by mere exposure, by associative learning, by self-perception and for functional reasons. Mostly, these are applied when there is no prior or existing attitude or knowledge about the attitude object.

Mere exposure: merely being exposed to something many times can increase the liking of it. Consistent pairings of something with pleasant or unpleasant stimuli can lead to an association being developed (Crisp & Turner, 2014). This has been confirmed by Sweldens (2014) in a study that assessed the role of awareness in attitude formation through evaluative conditioning, stating that attitudes are formed through response by repeatedly pairing a stimulus with other stimuli of positive or negative valence.

Associative learning **:** according to Crisp and Turner (2014), there are two ways in which a person can learn by association, either implicitly through classical conditioning, or explicitly through operant conditioning. Firstly, classical conditioning refers to a learning process that occurs when a neutral stimulus is paired with a stimulus that naturally evokes an emotion consequently, the previously neutral stimulus, after enough pairings with the positive or negative object, will acquire a positivity or negativity of its own. Secondly, operant conditioning refers to whereby behaviour is strengthened, following rewards and weakened, following punishments. It is different from classical conditioning in that the former occurs implicitly, no action is required on behalf of the participant for associations to form. In contrast, operant conditioning is behavioural and in nature, participants must carry out some action that is either rewarded or punished. For example, in the Pay As You Throw system, citizens separate recyclables from waste, thus pay less for waste to the landfills and as a result, the recycling behaviour is the strengthened.

Self-perception **:** The idea behind the self-perception theory is that people form attitudes not due to exposure or associative learning, but from observations of their own behaviour (Crisp & Turner, 2014). According to Fazio and Olson (2007), attitudes are formed from observing our own behaviours such as the opinions we openly express on particular issues and then attributing them to either internal or external causes, with internal attributions more likely when the behaviour was freely chosen.

Importantly, inference of one's attitudes from behaviour is more likely to occur when someone has little or no existing knowledge about the issue at hand, or does not hold a strong prior attitude towards the attitude object.

2.3.4 Theories of attitude and behaviour change

This section discusses a variety of theories on attitude and behaviour change, namely the cognitive dissonance theory, Theory of planned Behaviour, and Value-Belief-Norm Theory (Prager, 2012).

2.3.4.1 The Cognitive Dissonance Theory

The cognitive dissonance theory was first proposed by Leon Festinger in 1957 (Harmon-Jones & Harmon-Jones, 2008).The theory predicts that when an individual holds two or more elements of knowledge that are relevant to each other, but inconsistent with one another, a state of discomfort is created and that state is dissonance (Zentall, 2010). According to Gawronski and LeBel (2008), this theory suggests that one of the most basic human motives is the desire for personal consistency. In order to achieve a state of cognitive consistency, people change their personal attitudes, their behaviours, or the personal importance of an attitude object. As a result, everyone recognises at some level, when they are acting in a way that is inconsistent with their beliefs or opinions, then they will seek to reconcile, for example, aligning their attitudes with behaviour (Harmon-Jones and Harmon-Jones, 2008;(Zentall, 2010).

The cognitive dissonance theory led to an increased understanding of attitude and behaviour change processes (Harmon-Jones & Harmon-Jones, 2008). A dissonance is an inconsistency between one`s action on one hand, and beliefs on the other. Refer to Figure 2.2.

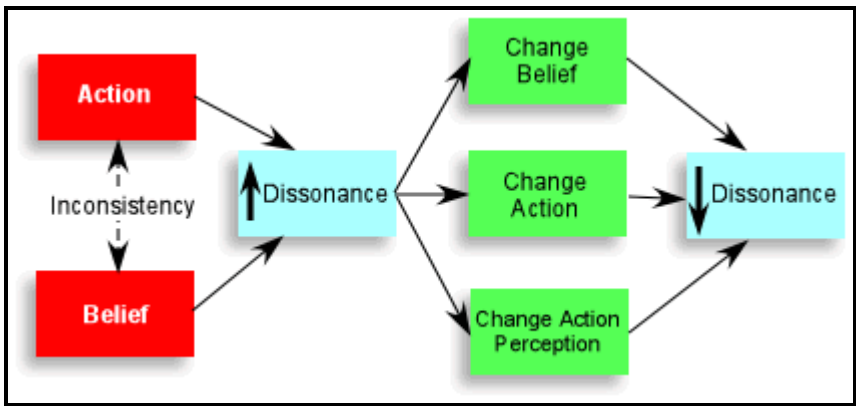

Figure 2.2: The Cognitive Dissonance Theory

Adapted from : https://www.gamfield.uk.cognitive-dissonance-gamification

Figure 2.2 reflects that dissonance can be resolved in one of the three ways: Firstly, a person can simply change beliefs. Second is to change action, a person can decide not to do the pariticular action or lastly, to change perception of action.

A study by Rodrigues and Girandola (2017) investigated self- prophecy and congnitive dissonance and showed that self-prophecies are a source of psychological discomfort, only when the recycling habit is weak. The psychological discomfort experienced is reduced when the participants had the opportunity to justify their transgressions.

2.3.4.2 Theory of planned Behaviour

The Theory of Planned Behaviour is an extension of the theory of reasoned action (Ajzen and Fishbein, 1980). According to the TPB model (Figure 2.3), the most proximal predictors of behaviour are behavioural intentions, which in turn are preceded by (a) attitudes which reflect the individual's positive or negative appraisal of a behavioural option (b) a subjective norm, the social pressure from reference group members to enact the behaviour and (c) perceived behavioural control, which refers to the perceived ease or difficulty of performing the behaviour. Based on this theory, Maio et al. (2007) concluded that an individual's behaviour is based on his or her readiness to perform that behaviour, for example, intention to recycle.

Mosquera (2012) agree with the TBP model that suggests that people who have a positive attitude towards environmental protection (general environmental attitude), who perceive support from their family and peers (subjective norm), and also believe in their own ability to take an active part in the conservation and enhancement of environmental quality (perceived

behavioural control) are more willing to participate in environmental conservation activities, such as waste recycling.

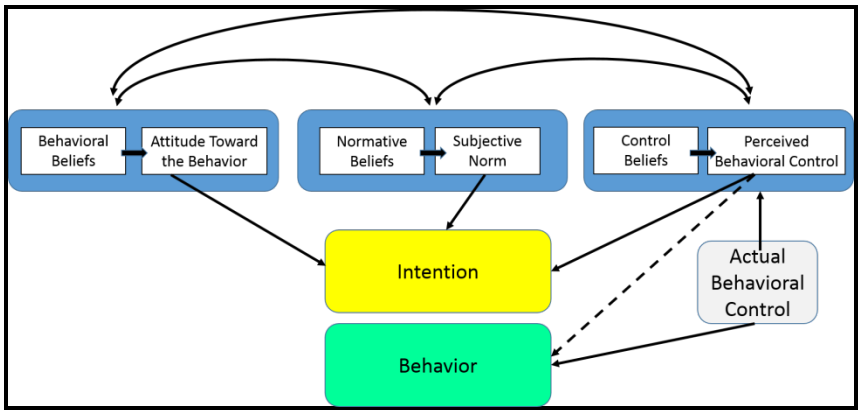

Figure 2.3: Theory of planned Behaviour Model

Adapted from Ajzen, (1991:179)

According to Zhang et al., (2015) the theory of planned behaviour (TPB) can provide a theoretical framework for systematically examining behaviour concerning waste separation (D. Zhang, Guangqing Huang, & Gong, 2015). TPB has been widely used to investigate waste behaviour (Bortoleto, Kurisu, & Hanaki, 2012; Ghani, Rusli, Biak, & Idris, 2013; Pakpour, Zeidi, Emamjomeh, Asefzadeh, & Pearson, 2014) and there is evidence that the theory's specified cognitive effects on behaviour have shown successful interventions (Mahmud & Osman, 2010; Maio et al., 2007).

It has been discovered that attitudes, subjective norms, perceived behavioural control, intentions and situational factors significantly predicted household waste behaviours (D. Zhang et al., 2015). However , according to Schwab, Harton, and Cullum1 (2014), behavioural theories and models do not bring about change, nor can they predict with certainty, what changes in behaviour will occur. But, they can inform policy makers, implementers and others involved in trying to bring about change about the issues to consider and likely success of initiatives and interventions.

The TPB theory is not specific to altruistic behaviour and as such, does not specify the likely objects of the key belief (López-Mosquera & Sánchez, 2012). Nigbur, Lyons, and Uzzell (2010) indicate that attitude alone does not predict behaviour perfectly because it is one contributor to behavioural intentions.

This theory suggests that for an individual to participate in the waste recycling, three things should be considered and these include a person's positive or negative appraisal of recycling, social pressure towards recycling and easy and difficulty of performing waste recycling.

2.3.4.3. Value-Belief-Norm Theory

The Value –Belief Norm (VBN) theory of pro-environmental behaviour was developed by Stern and collaborators (Stern et al., 1995; Stern, 2000). This theory suggests that human values adopt the traditional conception of values as variables that guide and determine action and attitudes towards objects and situations. According to Stern (2000), for those behaviours not strongly constrained by contextual forces, individual choice about pro-environmental actions can be driven by personal norms, then an internalised sense of obligation to act in a certain way. Stern further indicated that norms are activated when an individual believes that violating them would have adverse effects on things they value and that by taking action, they would bear significant responsibility for those consequences. Similarly, according to Dietz et. al. (1999), the value –belief –norm theory holds pro-environmental actions that occur in response to personal moral norms about such actions and that these are activated in individuals who believe that environmental conditions pose threats to other people, other species, or the environment. Also, it was confirmed by Prager (2012) that according to the value-belief-norm theory, pro-social attitudes and personal moral norms are significant predictors of pro-environmental behaviour.

The theory suggests that behaviour change depends critically on the prominence of specific beliefs and values. Therefore, citizens' recycling behaviour can change if citizens can believe that recycling has a significant role in protecting the environment.

2.4 Previous studies on attitude and recycling behaviour

This section discusses empirical studies on attitude and recycling behaviour conducted in a number of countries such as Malaysia, America, Nigeria and South Africa.

2.4.1 Attitudes and recycling behaviours for the developed countries

A study conducted by Jekria and Daud (2015) in Malaysia focused on 143 households of Selangor to conclude that attitude helps to enhance environmental concern to improve recycling behaviour. Furthermore, it also revealed that people who are concerned about the

environment are more likely to recycle**.** This has been confirmed by Mavropoulos (2017), who stated that environmentalists are conscious of the effects of environmental problems and thus, feel morally obliged to participate in behaviours that they believe will have a tangible effect on the global and local environment. However, Miafodzyeva and Brandt (2013) argued that environmental concern about recycling as an important activity alone cannot guarantee recycling behaviour. Factors such as the inconvenience barrier, the lack of information and lack of positive personal values that reduce the extent of the personal effort can be overwhelming and recycling behaviour may not be performed (Miafodzyeva & Brandt, 2013).

Omran (2008) investigated household attitude towards recycling of solid waste in Malaysia and revealed that educating individuals about how, what and where to recycle is important. However, individuals who are unconvinced may believe that their participation in waste recycling would not make any difference. Individuals like these may need more persuasion to recycle. Simple education and advertising procedure have been relatively unsuccessful in encouraging participation in paper recycling programs. On the other hand Pakpour et al. (2014) study conducted in Iran to understand the factors affecting recycling behaviour suggested that educational materials which target moral obligation and action planning may be particularly effective in influencing recycling behaviours.

A study conducted by Schwab, Harton and Cullum (2014) suggests that interactions between proximal neighbours can lead to regional differences in attitudes, behaviour, and other socially influenceable attributes. This was confirmed by Jekria and Daud (2015) as family, friends, neighbours or colleagues influence the positive environmental behaviours such as composting, recycling and conservation. Notably, parameters such as income, age, education, gender, unemployment and cultural aspects, have also been identified to have an influence on the recycling behaviour (Becker, 2014; Zhang et al., 2015). This illustrates that residents' educational levels have the greatest influence on waste separation behaviour (Zhang, et. al, 2015).

2.6 Conclusion

This chapter discussed literature on the concept of waste recycling, taking into consideration municipal context, waste recycling in the developing and the developed countries. Because recycling is not what some people were brought up to do naturally, this chapter discussed the formation and change of attitude and behaviour theories. On that note, studies in various countries regarding attitude and waste recycling have also been discussed in this chapter. The

next chapter focuses on the research methodology adopted to answer the research questions for this study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the methodology used to conduct this empirical study. The areas to be addressed include the research approach, sampling procedure, field work and administration of questionnaires, data analysis and limitations.

3.2 Research approach

According to Yin (2009), the researcher should choose a research strategy as a function of the research situation, since each research strategy has its own specific approach in collecting and analysing empirical data. Currently, there are three research approaches namely the quantitative, qualitative and the mixed method approaches (Creswell, 2014). Quantitative approach involves the collection, analysis and interpretation of numeric data collected through experiments or surveys, or through interviews using structured or unstructured questionnaires (Leedy, 1993; Creswell, 2014). Whereas, the qualitative approach is primarily exploratory research aimed to gain an understanding of the underlying opinions and motivations. Qualitative research is also used to uncover the trends in thought and opinions and goes deeper into the problem. The mixed method approach involves the collection of both quantitative and qualitative data, integrating the two forms of data (Creswell, 2014).

This study adopted the quantitative approach, characterised by the collection, analysis and interpretation of quantitative data using structured questionnaires. The researcher's rationale behind using the quantitative approach is that the results will be generalised from a large sample population and the objective of the study is to quantify citizens' attitudes towards recycling.

3.3 Sampling design and procedure

This section covers the research design, study population, site selection and sampling procedure.

Each type of empirical research shall have an explicit research design (Yin 2009). Research design is defined as the logical model of proof that allows the researcher to draw conclusions concerning relations among the variables under investigation (Nachmias & Nachmias 1992).

The most commonly used research designs are exploratory research design, descriptive survey research design and causal research design (Sekaran & Bougie, 2013). Exploratory research is undertaken when not much is known about a phenomenon, or no information is available on how similar problems or research issues have been solved in the past. Descriptive research is conducted to describe the distribution of traits or attributes in a population. One of the objectives of descriptive studies is to estimate the percentage of units in a specified population exhibiting certain behaviour. In descriptive research, a sample of a population is surveyed to learn about the population. Causal research: Studies that establish causal relationships between variables are termed causal studies. The emphasis here is on studying a situation or a problem in order to explain the relationship between variables.

Unlike exploratory research, descriptive and causal research is quantitative. However, descriptive research is designed to describe what is going on or what exists, whilst causal studies are designed to determine whether one or more variables causes or affects the value of other variables. The objectives of this study include to describe the existing attitudes of citizens of ULM, thus the research design for this study is descriptive.

3.3.1 Study population

Babbie (2008) defines population for a study as that group of people about whom the researcher wants to draw inferences. Similarly, Black (1999) defines population as any group of people who share a set of common traits. The 86 609 households of the uMhlathuze Local Municipality as generators of waste, are referred to as the population for this study.

3.3.2 Considerations for Site selection

The major considerations for the selection of site include access to the recycling facility, cultural diversity and social status, in terms of income and education levels. Thus, this led to the purposeful selection of three areas, Meerensee, Aquadene and Esikhawini. Meerensee and Aquadene are both located within Richards Bay**.**

Meerensee is an upmarket suburb located on the edge of Richards Bay Harbour. According to the annual performance report (2015/2016), Meerensee is the wealthiest suburb in uMhlathuze

Local Municipality. It was therefore selected due to high probability to select high level income citizens and also for its cultural diversity, probability to sample all races such as White, Coloured, Indian and Black African. Secondly, Meerensee was also selected because it was one the suburbs where the two-bag system is implemented.

Aquadene is also a suburb located in Richards Bay and was chosen for its unique multicultural population. The citizens in Acquaden include Indians, Coloureds and Black Africans. According to UMhlathuze Performance Report 2015/2016, in income levels range from high, middle, low income and no income classes.

Esikhawini is a Black township within uMhlathuze Local Municipality, consisting of middle and low-income residents (Ngubane, 2009). According to Simasiku (2010), Esikhawini also has income residents. The annual report (2015/2016) indicates that the majority of Esikhawini households earn less than R4 800 per annum. Therefore, the probability of selecting low than middle or high-income citizens was high.

3.3.3 Sampling procedure

The households as generators of waste and participants in waste recycling were selected using stratified random sampling from classes of high, middle, low and no income households. The average household income was used to categorise participants into these income brackets. It was notable that 3% of households were high income, 28% of them were middle income, 53% of them were low income and 15% claimed they did not receive income (IDP, 2017). An assumption was made based on the site selection considerations to target the household income levels. Meerensee was targeted for high income households, Aquadene for middle income and low income households, then Esikhawini was targeted for middle, low and no income households. Then households were selected randomly, based on accessibility and the availability of the participants on the selected areas. Therefore, a combination of stratified, random and convenience sampling was followed to obtain the data for this study.

3.3.4 Sample size determination

The sample size has been determined using a table for determining sample size for the known population. The table indicates that if the population is 75 000 or more, the required sample

size is 382 (Krejcie & Morgan, 1970). Therefore, for 86 609 households, the sample size for this study was 382.

Stratified random sampling was used to determine the sample size from 86609 households using income categories. The average household income was used to categorise participants into income brackets. Table 3.1 reflects how the overall sample size and size in each income bracket was derived from the population of 86609.

Table 3.1: Sample size determination from 86 609 households

Income category	%	Sample size
High income household	3	12
Middle income household	28	111
Low income households	53	202
No income	15	57
Total		382

3.4 Instrumentation

A variety of measuring instruments provides researchers with several options to choose the one that best suits the characteristics and needs of the study (Astrauskaite, Vaitkevicius & Perminas, 2011). Due to a large number of questions (35) for this study, the survey material in the form of structured questionnaire was designed. A structured questionnaire is one in which there are definite, concrete and pre-determined questions (Sekaran and Bougie, 2013). The questions are presented with exactly the same wording and in the same order to all the participants. This sort of standardisation is to ensure that all of the participants answer the same set of questions (Kothari, 2004). The questionnaire consisted mainly of close-ended questions.

The questionnaire was divided into 4 sections with D and C being optional (refer to Appendix 1). Section A consisted of questions on the participants' demographics which included age, gender employment status and level of income. Section B contained questions on recycling behaviour, Section C contained questions on recycling attitudes for the citizens who participated on waste recycling, Section D contained questions on recycling attitudes for the citizens who did not participate in waste recycle.

The use of the questionnaire enabled the researcher to survey a large number of participants with little expense and effort (Spector ,1997).

3.5 Field work and the administration of the questionnaire

The nature of the sampling procedure utilised in this study and the geographic distance between areas from which the sample was drawn necessitated the appointment of researcher assistants. Five (5) students who were doing their Honours studies from the University of KwaZulu Natal were recruited to assist the researcher to collect the data.

According to Mouton (1996), adequate training of interviewers, research assistants and field workers is a prerequisite of any research. The research assistants were trained prior to the execution of the duties. Training was done to give the research assistants clear instructions about their duties and to familiarise them with the content of the questionnaire. The duties included how to approach research participants and the anonymity of the answers on the questionnaire. This in turn ensured the reliability of information they were supposed to gather. The training took almost two hours. The researcher discussed all the questions in the questionnaire with the research assistants.

The data were collected in five consecutive weekends (Saturdays to be specific). The research assistants distributed the questionnaires per household to any citizens above the age of 19. Therefore, if the household visited had two or three persons above 19 years of age, all of them were selected, as the study was exploring individual attitude. The questionnaires were distributed in the morning and collected after lunch from each household. Some citizens would request the research assistants to go through and translate the questionnaire with them, as they answered it. The households were stratified as per the selected areas namely Meerensee for high income, Acquaden for middle income and Esikhawini for low income.

3.6 Pre-testing of the questionnaire

According to Surujlal (2003), regardless of the expertise and experience of the designer of the questionnaire, pre-testing should be undertaken to ensure that the questionnaire communicates the information correctly and clearly to the respondent. Questionnaire pre-testing is important to identify and reduce redundancy of the questionnaire (Coetzee, 2005). Training conducted with the research assistants was used to test the questionnaire.

3.7 Pilot study

Pilot study is a rehearsal of the main investigation because it is similar to the planned investigation, but on a small scale (Brynard, Hanekom, & Brynard, 2014). Welman et al. (2005) further explain that pilot study is intended:

- To detect any possible flaws in the measurement procedures.
- To identify unclear formulated items.

According to Mouton (2001), research using an untested research questionnaire will result in wasted efforts, for example, there might be ambiguous or vague items and words that are not defined. For this purpose, the researcher piloted the questions and few respondents possessing the same characteristics as those of the main investigation were involved in the study, to ascertain certain trends. The questionnaire was randomly distributed to 20 citizens of KwaDukuza Municipality, to assess the suitability of the questionnaire. Upon completion of the questionnaire piloting, minor modifications were made to the questionnaire.

3.8 Data analysis

The quantitative data entries for the questionnaire were done using Microsoft Excel, through coding of the various variables contained in the questionnaire.

The excel format of the questionnaires data entry was imported into IBM-SPSS for descriptive and inferential statistics. The respondents' responses to variables contained in the questionnaire were presented in frequencies, percentage and cumulative percentage in different frequency tables and charts, as deemed appropriate.

A scoring and grading system was developed to assess the overall recycling behaviour of the respondents, recycling attitude among the respondents who reported to separate waste for waste recycling and those who did not.

Based on the Likert scale used, a score of one (1) was assigned to the least appropriate response to each of the statements, while five (5) was awarded to the most appropriate response. For example, Section C of the questionnaire statement one states *"I get satisfaction by taking part into waste recycling"* the least appropriate answer was strongly disagree. Therefore, strongly disagree is scored -1, disagree-2, neither agree or disagree -3, agree-4 and strongly agree is scored 5.

The scoring and grading system were applied on Sections B, C and D of the questionnaire, on the statements for recycling behaviour, attitudes for those who recycled waste and those who did not recycle waste, respectively.

In Section B, statements with the strongly agree as most appropriate and positive answer were statements 1, 6, 8, 9 refer Table 3.2 and 2, 3, 4,5,6,7 and 10 statements strongly disagree is the most appropriate answer. Refer Table3.3.

Table 3.2: Section B statements (Strongly agree most as appropriate)

No.	Statement
1	I separate recyclable waste for every waste collection
6	I use food or organic waste for composting
8	I encourage my friends and neighbours to separate recyclable waste
9	I enquire / research about new methods of waste recycling

Table 3.3: Section B negative statements (Strongly disagree most appropriate)

No.	Statement
2	I only separate waste for recycling when I remember
3	I separate everything that is recyclable
4	I separate some of the things that are recyclable
5	I separate recyclables to exchange them for cash
7	I only separate waste when I am at work or varsity, because separate bins are provided for waste separation
10	I do not separate recyclable waste

In Section C (those who separated waste for recycling), statements with the most appropriate answer as strongly agree are statements 1, 2,4,5,7 and 8. Refer to Table 3.3, then statements 3 and 6 strongly disagree will be most appropriate answer. Refer to Table 3.4.

Table 3.3: Section D Positive statements (Strongly agree most appropriate)

No.	Statement
1	I get satisfaction by taking part in waste recycling
2	I feel I am making a difference in conserving our environment
4	I am motivated to take part in recycling because resources are available
5	I believe recycling of waste help in littering problems
7	I grew up to find my family separating waste for recycling
8	I separate waste for recycling because our local municipality encourages us to do so

Table 3.4: Section D Negative statements (Strongly disagree most appropriate)

No.	Statements
3	I am motivated to recycle because it has a financial benefit
6	I separate waste for recycling because my neighbours or friends separate their waste

In section D (those who did not separate waste for recycling), strongly disagree was the most appropriate answer for the statements 1 to 10.

To grade the overall recycling behaviour of the respondents, respondents with overall points above 50% of the total obtainable points were graded "GOOD", while those below were graded "POOR".

For overall recycling attitude, the respondents with overall points above the 60% total obtainable points were tagged "POSITIVE", those between 50% to 60% where tagged "NEUTRAL" (this was because they were at verge of dropping down below the average), while those below 50% of the total obtainable maximum point were tagged "NEGATIVE".

3.9 Factor analysis

Factor analysis is used for interval variable completely dependent on correlations between variables and it summarises correlation structure. However, data for this study were mainly ordinal variable (order/scale), but the responses were converted from all sections of the

questionnaire namely Sections B, C and D to code representation i.e. 1, 2, 3, 4, 5 to carry out the factor analysis. Therefore, since each section had a set of questions, the first question was numbered 1, second question numbered 2 and so forth, depending on the number of question per section. The exploratory factor analysis was therefore used to find out which of the variables had the most profound influence on the result outcomes. The third objective of this study looked at establishing the linkage between the attitudes of individuals and their behaviours. Therefore, the results from this analysis might assist the researcher to identify which attitudes statements have profound influence on the behaviour of the citizens of uMhlathuze Local Municipality.

Chi-square test was used to determine the association between independent variables (such as socio-demographic variables and recycling attitude, as the case may be) and dependent variables (such as recycling behaviour and recycling attitude). All statistical tests were carried out at 95% CL (P=0.05).

3.10 Reliability and validity

The questionnaire used for this study was subjected to reliability tests using Cronbach's Alpha to determine its appropriateness. According to Sekaran (2009), Cronbach Alpha is a reliability coefficient that indicates how well the items in a set are positively correlated to one another. The purpose was to eliminate questions that were found not to be reliable and valid when compared to the Cronbach's Alpha value. Table 3.5 provides the interpretation criteria.

Table 3.5: Interpretation of Cronbach's Alpha Model

NO.	Descriptions of Measures	Expected Outcomes
1	For a value above 0.8	Reliability is considered good
2	For a value between 0.6 and 0.8,	Reliability is considered acceptable
3	For a value below 0.6	Reliability is considered unacceptable

Adopted from: Tavakol and Dennick (2011: 53-55)

In this study, reliability analysis was done to determine the reliability of the questionnaire. Internal consistency of the variables was measured using Cronbach's Alpha reliability coefficient. A high value of alpha indicates good internal consistency. For this study, the overall results indicated a Cronbach coefficient alpha of 0.8562. According to Gliem and Gliem (2003), the internal consistency achieved was good, and even very good according to Nunnally (1994) who maintained that an instrument is reliable if it has a coefficient of Cronbach alpha equivalent to, or higher than 0.70.

Validity is defined as the extent to which a test measures what one actually wishes to measure (Cooper, Schindler, & Sun, 2006). This definition is similar to the one reported by (Jackson & Mazzei, 2008), which states that validity refers to whether a measuring instrument measures what it claims to measure. In formulating the questionnaire, the researcher ensured that all the questions that were asked related to the concept of recycling behaviour and citizens' attitudes towards recycling.

As suggested by Cooper et al. (2006), the researcher ensured that the questionnaire covered all the investigative questions guiding the research. When the research instrument covers all the areas that the research questions are about, it is said to have content validity.

3.11 Ethical considerations

The researcher conducted the study after having secured permission from the Municipal Manager's office (see Appendix 3); application was then made for ethical clearance from the research office of University of KwaZulu-Natal and this was granted (Appendix 2). The manner in which the research was conducted, as well as the manner in which the questions were designed, ensured that the participants were not embarrassed. Those who could not understand English, the questionnaire was interpreted for them and consent letters written in isiZulu were also made available for those who could not read English. All of the participants were made aware that their participation was voluntary and that they could withdraw at any time. Therefore, since in some households, questionnaires were left for the participants to complete, first the consent letter (Appendices 5&6) was explained and each participant signed before the questionnaire was handed to them. The participants were also made aware that anonymity and confidentiality would be ensured. The researcher clearly indicated to all the participants how the research data would be stored and disposed of, once the research was complete.

3.12 Limitations of the study

One of the key limitations of the study was the fact that the data collection could not be carried out by the researcher alone; she had to recruit enumerators to assist. There was also a difficulty of accessibility to the household members, as some of the citizens were not welcoming.

3.13 Summary

This chapter detailed the methodological approach employed for this study. It gave an account of each step of the empirical work and the justifications for them as well as an explanation of the data analysis approach. It thus provided the scientific basis for the results that will be presented in the next chapter.

CHAPTER 4

PRESENTATION OF RESULTS

4.1 Introduction

The aim of this chapter is to present the results of this study. In this regard, the chapter begins by presenting the socio-demographic data of the participants, recycling behaviour and recycling attitudes of the participants to understand influence and linkages between these aspects.

4.2 Response rate

A total of three hundred and eighty-two (382) questionnaires were distributed, from which three hundred and twenty-two (322) were retrieved and analysed, giving a respondent rate of 84.3%.

4.3 Results presentation

4.3.1 Socio-demographic characteristics of the respondents

This section presents the results on age, gender, employment status and income levels of the respondents in this study. The section also presents the area and nature of dwelling for the respondents**.**

From Table 4.1, the majority (71.8%) of the respondents in this study were early adults with ages between 19 to 45 years and a mean age of 40.24 ±10.12 years. Also, the study population was dominated by females and Africans, as shown in the table. The majority (75.2%) of the respondents were employed, although most (57.8%) of them had relatively low income of R1 to R76, 400 per annum.

Table 4.1: Socio-demographic characteristics of respondents

VARIABLES	FREQUENCY (n = 322)	PERCENTAGE (%)	CUMMULATIVE PERCENTAGE (%)
Age (years)			
19 – 35	90	28.0	28.0
36 – 45	141	43.8	71.7
46 – 55	73	22.7	94.4
56 – 65	14	4.3	98.8
66 and above	4	1.2	100.0
Mean ±SD = **40.24** ±10.12 years			
Gender			
Male	95	29.5	29.5
Female	227	70.5	100.0
Nationality			
African	249	77.3	77.3
Indian	46	14.3	91.6
White	12	3.7	95.3
Coloured	15	4.7	100.0
Current Employment status			
Employed	242	75.2	75.2
Unemployed	41	12.7	87.9
Self-employed	21	6.5	94.4
Retired	7	2.2	96.6
Student	11	3.4	100.0
Income Category (per annum)			
R614,401 and above	7	2.2	2.2
R76,401 – R614,400	63	19.6	21.7
R1 – R76,400	186	57.8	79.5
No Income	66	20.5	100.0

In terms of area and nature of dwelling, Table 4.2 shows that most (58.1%) of the respondents were from Esikhawini area, while 52.8% lived in houses with a garden.

Table 4.2: Respondents' area and nature of dwelling

VARIABLES	FREQUENCY (n = 322)	PERCENTAGE (%)	CUMMULATIVE PERCENTAGE (%)
Area			
Meerense	39	12.1	12.1
Aquadene	96	29.8	41.9
Esikhawini	187	58.1	100.0
Nature of Dwelling			
Flats with garden	19	5.9	5.9
Flats with no garden	61	18.9	24.8
House with garden	170	52.8	77.6
House with no access to the garden	69	21.4	99.1
Others	3	.9	100.0

4.3.2 Recycling behaviour of the respondents

The results in Table 4.3 show that most (91%) of the respondents did not always separate waste recycling for every waste collection. To be more specific, 36.0 % and 55.0% of the respondents strongly disagreed and disagreed respectively with the statement "I separate recyclable waste for every waste collection". And looking across all the other statements relating to recycling behaviour, the respondents mostly either strongly disagreed or disagreed with the positive statements of desirable recycling behaviour.

Table 4.3: Recycling behaviour of respondents

STATEMENT (n = 322)	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
I separate recyclable waste for every waste collection	116 (36.0)	177 (55.0)	10 (3.1)	15 (4.7)	4 (1.2)
I only separate waste for recycling when I remembered	110 (34.2)	152 (47.2)	6 (1.9)	51 (15.8)	3 (0.9)
I separate everything that is recyclable	113 (35.1)	184 (57.1)	6 (1.9)	16 (5.0)	3 (0.9)
I separate some of the things that are recyclable (i.e paper only, bottles only, cans only or plastics only)	108 (33.5)	141 (43.8)	8 (2.5)	60 (18.6)	5 (1.6)
I separate recyclables to exchange them for cash	136 (42.2)	172 (53.4)	0 (0.0)	7 (2.2)	7 (2.2)
I used food or organic waste for composting	122 (37.9)	176 (54.7)	5 (1.6)	18 (5.6)	1 (0.3)
I only separate waste when I am at work or varsity, because separate bins are provided for waste separation	109 (33.9)	147 (45.7)	22 (6.8)	40 (12.4)	4 (1.2)
I encourage my friends and neighbours to separate recyclable waste	121 (37.6)	169 (52.5)	11 (3.4)	16 (5.0)	5 (1.6)
I enquire / research about new methods of waste recycling	119 (37.0)	175 (54.3)	12 (3.7)	15 (4.7)	1 (0.3)

I do not separate recyclable waste (I mix waste in one bag for municipal collection)	6 (1.9)	32 (9.9)	22 (6.8)	122(37.9)	140 (43.5)

A scoring and grading system was developed to assess the overall recycling behaviour of the respondents, based on the ten (10) behavioural related statements. Based on the Likert scale used for the behavioural related statements, a score of one (1) was assigned to the least appropriate response to each of the statements, while five (5) was awarded to the most appropriate response. For all statements, a respondent can be awarded a total maximum of fifty (50) points and a minimum of ten (10).

To grade the overall recycling behaviour of the respondents, the respondents with overall points above 50% of the total obtainable points were graded "GOOD", while others were graded "POOR". For example, for variable 1 "I separate recyclable waste for every waste collection" the most appropriate answer is strongly agree, therefore, if respondent strongly agree is scored 5, agree- 4, neither agree or disagree -3, disagree- 2 and strongly disagree is scored 1. Whereas for variable 7, "*I only separate waste when I am at work or varsity, because separate bins are provided for waste separation",* unlike variable 1, the most appropriate response is strongly disagree, meaning strongly disagree is scored 5, disagree -4 , neither agree or disagree- 3, agree -2 and strongly agree is scored 1.

The results of the grading for overall recycling behaviour of the respondents show that the majority (69.6%) of them had poor overall recycling behaviour, as 224 of the respondents had overall score of less than 50 %, indicated in Figure 4.1.

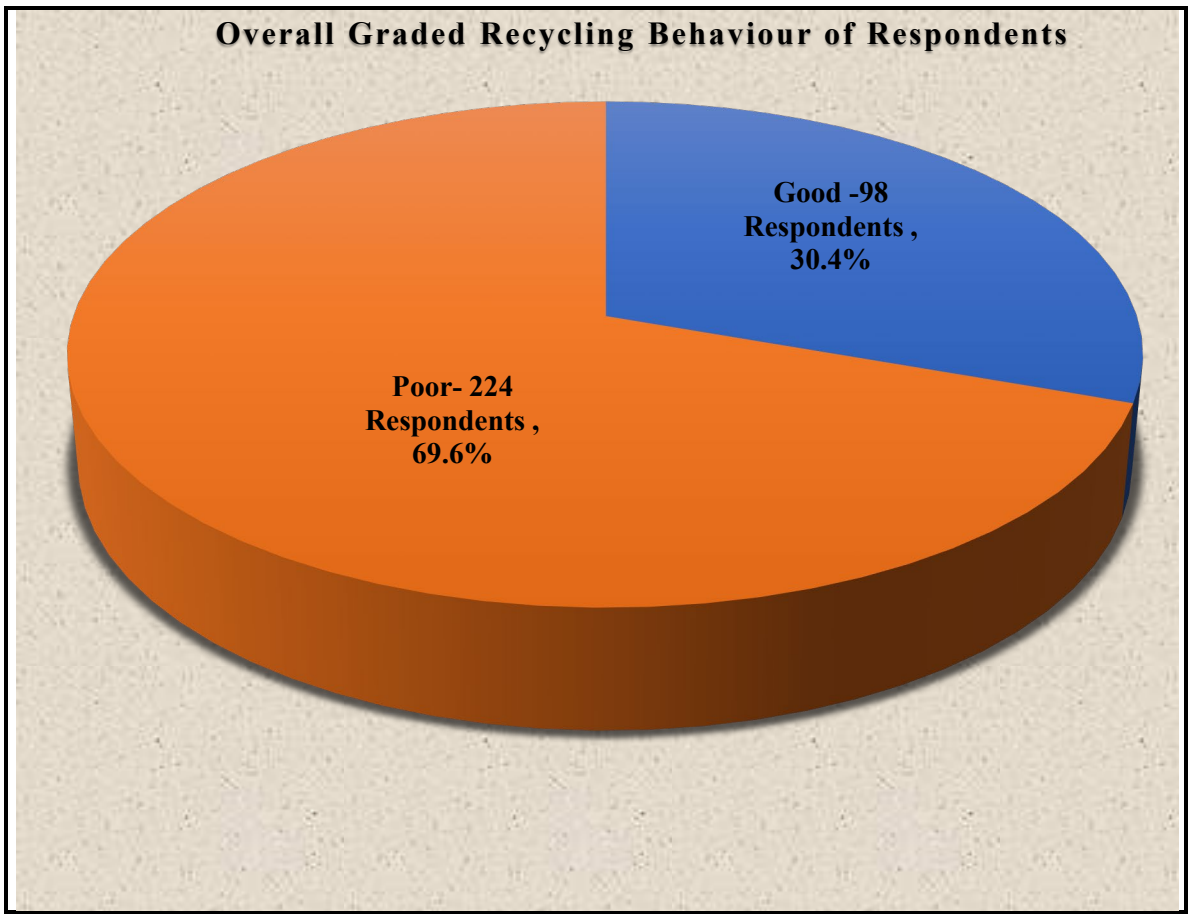

Figure 4.1: Chart showing overall recycling behaviour of respondents

The total variables, Table 4.4 from the factor analysis of recycling behaviour related-variables shows that the behaviour of the respondents was predominantly dictated by variables 1 and 2 i.e. **"***Separating recyclable waste for every waste collection" and "only separating waste for recycling when remembered***"**. As shown in the Total Variance table, they both dictate the recycling behaviour of the respondents by **73.075%.**

Table 4.4: Factor analysis for recycling behaviour related variables

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**6.171**	**61.713**	**61.713**	**6.171**	**61.713**	**61.713**	**4.104**	**41.040**	**41.040**
2	**1.136**	**11.362**	**73.075**	**1.136**	**11.362**	**73.075**	**3.203**	**32.034**	**73.075**
3	.834	8.343	81.418						
4	.507	5.070	86.488						
5	.405	4.049	90.537						
6	.330	3.299	93.836						
7	.249	2.493	96.329						
8	.162	1.625	97.954						
9	.124	1.239	99.193						
10	.081	.807	100.000						

Extraction Method: Principal Component Analysis.

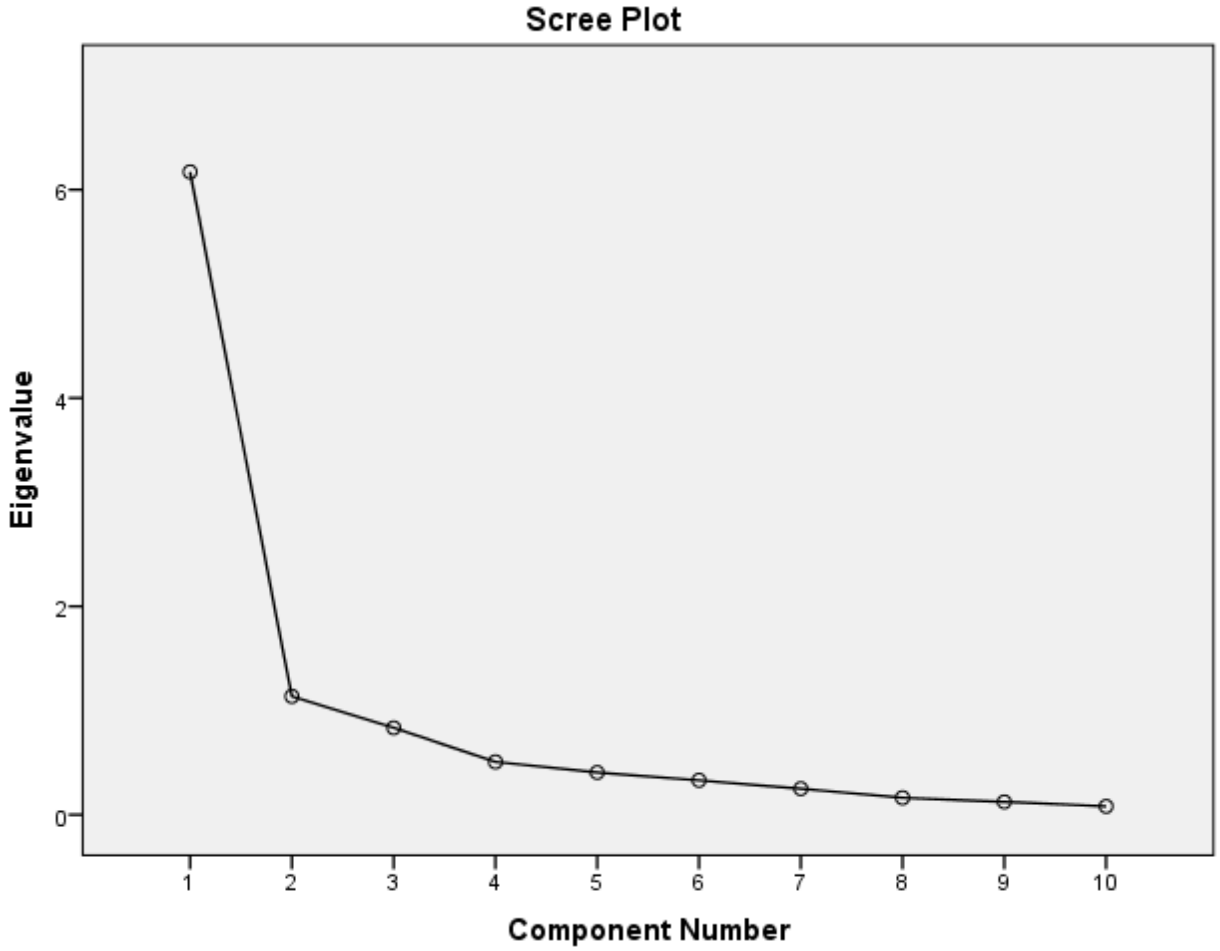

Figure 4.2: Scree plot diagram recycling behaviour variables

The plot shows that variables 1 and 2 which are: "I separate recyclable waste for every waste collection" and "I only separate waste for recycling when I remembered", respectively, have eigenvalues greater than "1" while 3, 4,5,6,7,8,9 and 10 have values less than "1". This indicates that variables 3, 4, 5,6,7,8, 9 and 10 with eigenvalue less than "1" less explain the variance in the recycling behaviour of the respondents, while variables 1 and 2 better explain the difference in the recycling behaviours of respondents. Therefore, the citizens of uMhlathuze Local Municipality either recycled waste, or they did not recycle waste at all.

As indicated in both the Table 4.5 and chart below, the majority (82.6%) of the respondents did not separate their waste for waste recycling, while just few did.

Table 4.5: Separation of waste for waste recycling among respondents

Statement	Frequency	Percentage	Cumulative Percentage (%)
Yes	56	17.4	17.4
No	266	82.6	100.0
Total	322	100.0	

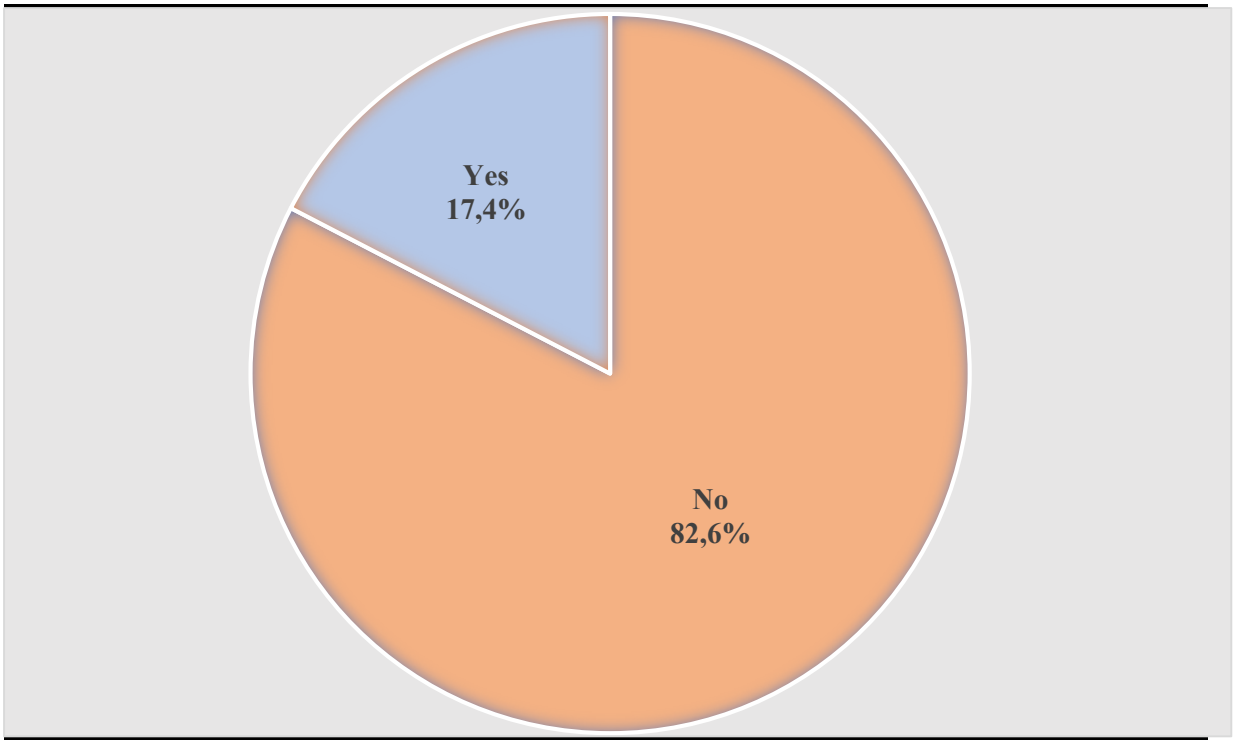

Figure 4.3: Chart showing separation of waste for waste recycling among respondents

The results of the recycling attitude among the respondents who separated waste for waste recycling show that most of them had a generally positive attitude towards waste recycling. It is interesting that the attitudes of these respondents were mostly influenced by the environmental and societal factors, but not economic factors. For instance, the majority (75.0%) of them agreed that they felt that they were making a difference in the conservation of their environment by separating waste for waste recycling. Also, 35.7% and 48.2% of them strongly disagreed and disagreed respectively, with the statement that they were motivated to recycle because of its financial benefit.

Table 4.6: Recycling attitudes among respondents who separate waste for waste recycling

STATEMENT (n=56)	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
I get satisfaction by taking part into waste recycling	2 (3.6)	14 (25.0)	26 (46.4)	10 (17.9)	4 (7.1)
I feel I am making difference in conserving our environment	0 (0.0)	5 (8.9)	4 (7.1)	42 (75.0)	5 (8.9)
I am motivated to recycle because it has a financial benefit	20 (35.7)	27 (48.2)	2 (3.6)	5 (8.9)	2 (3.6)
I am motivated to take part in recycling because resources are available.	19 (33.9)	25 (44.6)	8 (14.3)	2 (3.6)	2 (3.6)
I believe recycling of waste help in litter problems	1 (1.8)	0 (0.0)	6 (10.7)	45 (80.4)	4 (7.1)
I separate waste for recycling because my neighbours or friends separate their waste	14 (25.9)	31 (57.4)	4 (7.4)	5 (9.3)	0 (0.0)

I grew up my family separating waste for recycling (It is normal to me to separate waste for recycling)	15 (26.8)	33 (58.9)	3 (5.4)	5 (8.9)	0 (0.0)
I separate waste for recycling because our l local municipality encourages us to do so.	35 (62.5)	10 (17.9)	9 (16.1)	2 (3.6)	0 (0.0)

The total variables indicated in Table 4.7, from the factor analysis of recycling attitudes variables for people who separated waste for recycling show that the behaviour of the respondents was predominantly dictated by variables 1, 2 and 3 i.e. "*getting satisfaction by taking part in waste recycling*", "*feelings of making difference in conserving the environment*" and "*motivation to recycle because it has a financial benefit"*. As shown in the Total Variance table, these dictated the recycling attitude of the respondents who separated waste for recycling by 65.43%.

Table 4.7: Factor analysis for recycling attitudes related variables - people who separate waste for waste recycling

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**2.785**	**34.808**	**34.808**	**2.785**	**34.808**	**34.808**	**2.022**	**25.280**	**25.280**
2	**1.394**	**17.422**	**52.231**	**1.394**	**17.422**	**52.231**	**1.933**	**24.165**	**49.445**
3	**1.056**	**13.202**	**65.432**	**1.056**	**13.202**	**65.432**	**1.279**	**15.988**	**65.432**
4	.817	10.211	75.643						
5	.712	8.903	84.546						
6	.545	6.807	91.353						
7	.428	5.344	96.698						
8	.264	3.302	100.000						

Extraction Method: Principal Component Analysis.

Figure 4.4: Scree plot diagram recycling attitudes related variables - people who separated waste for waste recycling

The plot shows that variables 1, 2 and 3 which are, respectively: "I get satisfaction by taking part into waste recycling", "*I feel I am making difference in conserving our environment"* and *"I am motivated to recycle because it has a financial benefit" have eigenvalues greater than* "1" while 4, 5,6,7,8 have values less than "1". This indicates that 4,5,6,7,8 variables with eigenvalue less than "1" less explain the variance in the recycling attitude among the respondents who reported to separate waste for waste recycling, while variables 1, 2 and 3 better explain the difference in the recycling attitude.

The results of the recycling attitude among the respondents who did not separate waste for waste recycling shown in Table 4.8 reveal that most of them had a general negative attitude towards waste recycling. Their attitude was affected by their ignorance about waste recycling, which leads to a wrong perception of it. In this study, 68.4% agreed that they did not feel guilty for not separating waste for recycling because they did not understand why it is important, while71.1% of them agreed that they were not worried seeing waste going to the landfill site.

The results also show that the majority (68.4%) of them agreed that they were discouraged to separate waste because no one collected the recyclables even if they placed them in separate bags.

Table 4.8: Recycling attitude among respondents who do not recycle waste

STATEMENT(n=266)	**Strongly Disagree**	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
I know about waste recycling, but waste separation is time consuming (I'd rather mix waste to save time)	7 (2.6)	53 (19.9)	43 (16.2)	155 (58.3)	8 (3.0)
I don't separate waste because I don't know which waste for recycling and where to place them after separation	5 (1.9)	38 (14.3)	86 (32.3)	124 (46.6)	13 (4.9)
I do not feel guilty for not separating waste for recycling because I don't understand why it is important	1 (0.4)	11 (4.1)	33 (12.4)	182 (68.4)	39 (14.7
Waste separation is perfect for unemployed people	17 (6.4)	74 (27.9)	114 (35.4)	46 (17.4)	14 (5.3)
There is no personal benefit from recycling waste	8 (3.0)	60 (22.6)	108 (40.6)	68 (25.6)	22 (8.3)

I do not separate waste because none of my neighbours or friend separate their waste for recycling	11 (4.1)	55 (20.7)	48 (18.0)	141 (53.0)	11 (4.1)
I am discouraged to separate waste because no one collects the recyclables even if I place them in separate bags	4 (1.5)	2 (0.8)	14 (5.3)	182 (68.4)	64 (24.1)
I do not separate waste because it is unhygienic to separate waste	15 (5.7)	67 (25.3)	105 (39.6)	65 (24.5)	13 (4.9)
It does not worry me to see waste going to the landfill site	5 (1.9)	9 (3.4)	26 (9.8)	189 (71.1)	37 (13.9)
I always postpone starting separation of waste for recycling	92 (34.6)	143 (53.8)	13 (4.9)	16 (6.0)	2 (0.8)

The factor analysis of the recycling attitude of 266 people who did not separate waste for recycling variables shows that the behaviour of the respondents was predominantly dictated by variables 1, 2, 3 and 4, that is "*I know about waste recycling, but waste separation is time consuming", "I don't separate waste because I don't know which waste for recycling and where to place them after separation", "I do not feel guilty for not separating waste for recycling because I don't understand why it is important"* and *"Waste separation is perfect for unemployed people"***.** As shown in the total variance table, they all dictated the recycling attitude of the respondents who did not separate waste for recycling by 64.19%

Table 4. 9: Factor analysis for recycling attitudes related variables - people who do not separate waste for waste recycling

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**2.827**	**28.266**	**28.266**	**2.827**	**28.266**	**28.266**	**2.218**	**22.178**	**22.178**
2	**1.363**	**13.629**	**41.895**	**1.363**	**13.629**	**41.895**	**1.866**	**18.659**	**40.837**
3	**1.189**	**11.890**	**53.785**	**1.189**	**11.890**	**53.785**	**1.216**	**12.161**	**52.998**
4	**1.040**	**10.400**	**64.185**	**1.040**	**10.400**	**64.185**	**1.119**	**11.187**	**64.185**
5	.869	8.688	72.873						
6	.822	8.222	81.095						
7	.591	5.908	87.003						
8	.495	4.951	91.955						
9	.428	4.280	96.235						
10	.377	3.765	100.000						

Extraction Method: Principal Component Analysis.

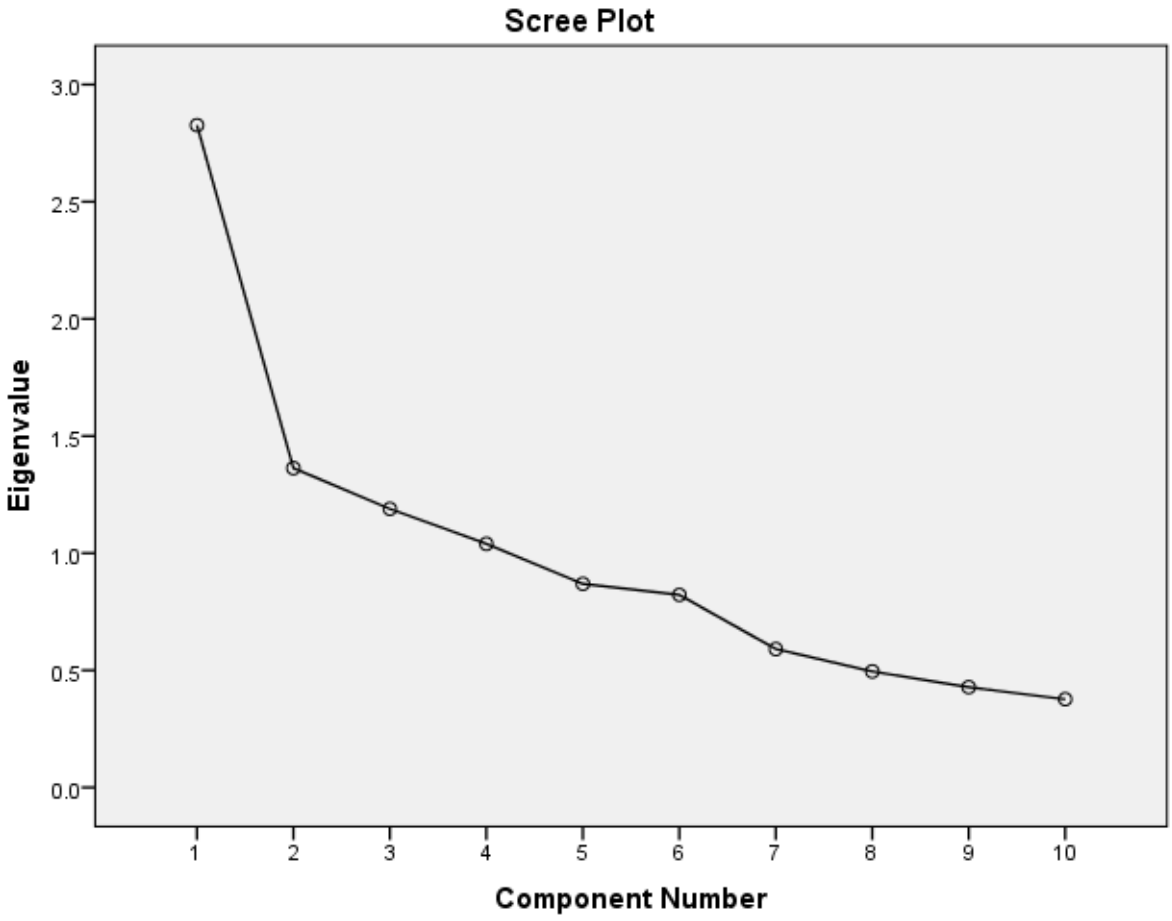

Figure 4.5: Scree plot diagram recycling attitudes related variables – people who do not separate waste for waste recycling

The plot shows that variables 1 , 2, 3, and 4 which are respectively "*I know about waste recycling, but waste separation is time*", "*I do not separate waste because I don't know which waste is for recycling and where to place them after separation*", "*I do not feel guilty for not separating waste for recycling because I don't understand why it is important*" and "*Waste separation is perfect for unemployed people*" have eigenvalues greater than "1", while other variables have values less than "1", with variables 8,9,and 10 which are respectively "*I do not separate waste because it is unhygienic to separate waste*", "*It does not worry me to see waste going to the landfill site*" and "*I always postpone starting separation of waste for recycling*" even less than 0.5. This indicates that the variables with eigenvalues less than "1" less explain the variance in the recycling attitude

among respondents who reported that they did not separate waste for waste recycling while variables 1, 2, 3 and 4 better explain the difference in the recycling attitude. Therefore, the significant underlying attitude factors to those who did not separate waste are time, visibility of recycling resources, as well as the lack knowledge and interest.

Just as in recycling behaviour earlier, a scoring and grading system approach was equally used to determine the overall recycling attitude among the respondents who separated waste for recycling and those who did not. Therefore, the most appropriate answer scored 5 and the least appropriate answer scored 1. For example, variable 1 which states "*I know about waste recycling, but waste separation is time consuming*", the most appropriate answer is strongly disagree. Therefore, strongly disagree scored 5, disagree-4, neither disagree or agree-3, agree-4 and strongly agree -1.

For those who separated waste for recycling, the total obtainable maximum point was forty-seven (47) and the minimum was nine (9). Similarly, the respondents with overall points above the 60% total obtainable points were tagged "POSITIVE", those between 50% to 60% where tagged "NEUTRAL" (this was because they were at verge of dropping down below the average), while those below 50% of the total obtainable maximum point were tagged "NEGATIVE".

The result in Table 4.10 show that the majority (83.9%) of those that reported that they separated waste for waste recycling had positive attitude towards waste recycling, meaning that they did not think recycling was time consuming and they separated waste even though there were no adequate resources, while just very few (14.7%) of those who did not separate waste had positive attitude, who thought recycling was not time consuming. The results also show that 16.1% of those who recycled waste were neither positive nor negative towards the recycling of waste, same with the 57.1% of those who did not recycle waste. Lastly, the results in Table 4.10 reveal that 28.2 of the respondents who did not recycle waste had negative attitude towards waste recycling, meaning that the felt waste recycling was time consuming and they did not feel guilty about not separating waste.

Table 4.10: Overall recycling attitude among respondents who separated waste for recycling and those who did not

Overall Grading	Frequency	Percentage	Cumulative Percentage (%)
Respondents who separated waste for recycling			
Positive	47	83.9	83.9
Neutral	9	16.1	100.0
Total	56	100.0	
Respondents who did not separate waste for recycling			
Positive	39	14.7	14.7
Neutral	152	57.1	71.8
Negative	75	28.2	100.0
Total	266	100.0	

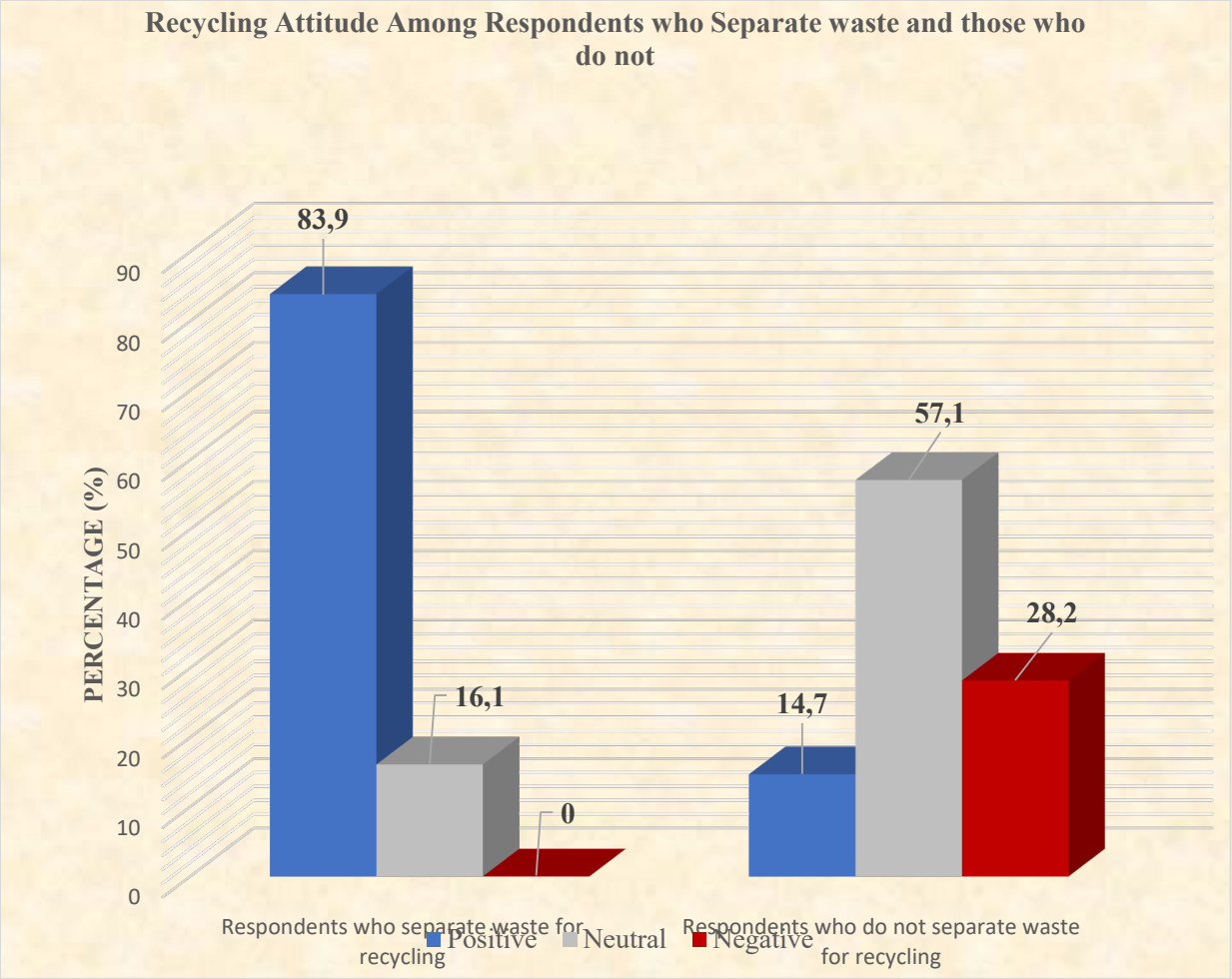

Figure 4.6: Chart showing the overall recycling attitude among respondents who separated waste for recycling and those who did not

4. Association between socio-demographic variables and respondents' overall recycling behaviour

The test of association shown in Table 4.11 reveals that out of all the socio-demographic variables tested, the respondents' overall recycling behaviour was statistically significantly associated with gender, nationality/race and current employment (P<0.05).

Overall, the majority of both male (81.1%) and female (64.8%) had poor recycling behaviour, while the White people (66.7%) had better recycling behaviour than other races. Most people who were self-employed (57.1%) had better recycling behaviour than other occupation groups.

Table 4.11: Association between socio-demographic variables and respondents' overall recycling behaviour

Variables	RECYCLING BEHAVIOUR			Chi square	P-value
	Good	Poor	Total		
	Freq. (%)	Freq. (%)	Freq. (%)		
Age (years)					
19 – 35	22 (24.4)	68 (75.6)	90 (100.0)	**4.298**	**0.367**
36 – 45	45 (31.9)	96 (68.1)	141 (100.0)		
46 – 55	23 (31.5)	50 (68.5)	73 (100.0)		
56 – 65	7 (50.0)	7 (50.0)	14 (100.0)		
66 and above	1 (25.0)	3 (75.0)	4 (100.0)		
Total	98 (30.4)	224 (69.6)	322 (100.0)		
Gender					
Male	18 (18.9)	77 (81.1)	95 (100.0)	**8.399**	**0.004****
Female	80 (35.2)	147 (64.8)	227 (100.0)		
Total	98 (30.4)	224 (69.6)	322 (100.0)		
Nationality/Race					
African	75 (30.1)	174 (69.9)	249 (100.0)	**8.477**	**0.037****
Indian	11 (23.9)	35 (76.1)	46 (100.0)		
White	8 (66.7)	4 (33.3)	12 (100.0)		

Coloured	4 (26.7)	11 (73.3)	15 (100.0)		
Total	98 (30.4)	224 (69.6)	322 (100.0)		
Current Employment status					
Employed	67 (27.7)	175 (72.3)	242 (100.0)	**11.549**	**0.021****
Unemployed	15 (36.6)	26 (63.4)	41 (100.0)		
Self-employed	12 (57.1)	9 (42.9)	21 (100.0)		
Retired	3 (42.9)	4 (57.1)	7 (100.0)		
Student	1 (9.1)	10 (90.9)	11 (100.0)		
Total	98 (30.4)	224 (69.6)	322 (100.0)		
Income Category (per annum)					
R614,401 and above	3 (42.9)	4 (57.1)	7 (100.0)	**2.040**	**0.564**
R76,401 – R614,400	18 (28.6)	45 (71.4)	63 (100.0)		
R1 – R76,400	53 (28.5)	133 (71.5)	186 (100.0)		
No Income	24 (36.4)	42 (63.6)	66 (100.0)		
Total	98 (30.4)	224 (69.6)	322 (100.0)		

**** = statistically significant**

As not everyone separated waste for recycling, the test of association in Table 4.12 shows that none of the socio-demographic variables tested had statistically significant association with overall recycling attitude among the respondents who separated waste for recycling (P>0.05).

As shown in Table 14.12, each class in all the socio-demographic variables had an overall positive attitude towards waste recycling. For example, in all age groups, the results showed percentages of the positive respondents are higher than of the neutral respondents, that is, 19-35 the 8.3 % was positive, meaning that they thought waste recycling was not time consuming, whereas only 16.7% was neither positive nor negative about waste recycling. Same with nationality, employment status and income categories, in each category, the percentage of those who were positive with waste recycling were more than of those who were neither positive nor negative towards waste recycling. Also, both male and female respondents who separated waste for recycling, the majority of them had a positive attitude towards waste recycling.

Table 4.12: Association between sociodemographic variables and overall recycling attitude among the respondents who separated waste for recycling

Variables	RECYCLING ATTITUDE			Chi square	P-value
	Positive	Neutral	Total		
	Freq. (%)	Freq. (%)	Freq. (%)		
Age (years)					
19 – 35	10 (83.3)	2 (16.7)	12 (100.0)	**2.207**	**0.698**
36 – 45	23 (85.2)	4 (14.8)	27 (100.0)		
46 – 55	8 (72.7)	3 (27.3)	11 (100.0)		
56 – 65	5 (100.0)	0 (0.0)	5 (100.0)		
66 and above	1 (100.0)	0 (0.0)	1 (100.0)		
Total	47 (83.9)	9 (16.1)	56 (100.0)		
Gender					
Male	15 (75.0)	5 (25.0)	20 (100.0)	**1.839**	**0.175**
Female	32 (88.9)	4 (11.1)	36 (100.0)		
Total	47 (83.9)	9 (16.1)	56 (100.0)		
Nationality					
African	27 (77.1)	8 (22.9)	35 (100.0)	**3.574**	**0.311**
Indian	8 (100.0)	0 (0.0)	8 (100.0)		
White	9 (90.0)	1 (10.0)	10 (100.0)		
Coloured	3 (100.0)	0 (0.0)	3 (100.0)		
Total	47 (83.9)	9 (16.1)	56 (100.0)		
Current Employment status					
Employed	37 (86.0)	6 (14.0)	43 (100.0)	**6.983**	**0.098**
Unemployed	3 (100.0)	0 (0.0)	3 (100.0)		
Self-employed	4 (66.7)	2 (33.3)	6 (100.0)		
Retired	3 (100.0)	0 (0.0)	3 (100.0)		
Student	0 (0.0)	1 (100.0)	1 (100.0)		
Total	47 (83.9)	9 (16.1)	56 (100.0)		

Income Category (per annum)					
R614,401 and above	4 (100.0)	0 (0.0)	4 (100.0)	**4.331**	**0.228**
R76,401 – R614,400	12 (70.6)	5 (29.4)	17 (100.0)		
R1 – R76,400	23 (92.0)	2 (8.0)	25 (100.0)		
No Income	8 (80.0)	2 (20.0)	10 (100.0)		
Total	47 (83.9)	9 (16.1)	56 (100.0)		

The test of association in Table 4.13 shows that out of all the socio-demographic variables tested, the overall recycling attitude among the respondents who did not separate waste for recycling was statistically significantly associated with nationality and income category (P<0.05).

Overall, the majority (100.0%) of the White people who did not separate waste for recycling still had an overall positive attitude towards waste recycling. Most of the respondents with income of R76,401 – R614,400 and those with R614.401 and above had an overall positive attitude towards waste recycling.

Table 4.13: Association between socio-demographic variables and overall recycling attitude among the respondents who did not separate waste for recycling

Variables	**RECYCLING ATTITUDE**				**Chi square**	**P-value**
	Positive	**Neutral**	**Negative**	**Total**		
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)		
Age (years)						
19 – 35	10 (12.8)	46 (59.0)	22 (28.2)	78 (100.0)	**4.082**	**0.850**
36 – 45	14 (12.3)	66 (57.9)	34 (29.8)	114 (100.0)		
46 – 55	13 (21.0)	34 (54.8)	15 (24.2)	62 (100.0)		
56 – 65	2 (22.2)	4 (44.4)	3 (33.3)	9 (100.0)		
66 and above	0 (0.0)	2 (66.7)	1 (33.3)	3 (100.0)		
Total	39 (14.7)	152 (57.1)	75 (28.2)	266 (100.0)		
Gender						

Male	10 (13.3)	44 (58.7)	21 (28.0)	75 (100.0)	**0.170**	**0.919**
Female	29 (15.2)	108 (56.5)	54 (28.3)	191 (100.0)		
Total	39 (14.7)	152 (57.1)	75 (28.2)	266 (100.0)		
Nationality						
African	23 (10.7)	130 (60.7)	61 (28.5)	214 (100.0)	**25.755**	**0.002****
Indian	11 (28.9)	19 (50.0)	8 (21.1)	38 (100.0		
White	2 (100.0)	0 (0.0)	0 (0.0)	2 (100.0)		
Coloured	3 (25.0)	3 (25.0)	6 (50.0)	12 (100.0)		
Total	39 (14.7)	152 (57.1)	75 (28.2)	266 (100.0)		
Current Employment status						
Employed	25 (12.6)	119 (59.8)	55 (27.6)	199 (100.0)	**6.474**	**0.594**
Unemployed	9 (23.7)	20 (52.6)	9 (23.7)	38 (100.0)		
Self-employed	2 (13.3)	8 (53.3)	5 (33.3)	15 (100.0)		
Retired	1 (25.0)	1 (25.0)	2 (50.0)	4 (100.0)		
Student	2 (20.0)	4 (40.0)	4 (40.0)	10 (100.0)		
Total	39 (14.7)	152 (57.1)	75 (28.2)	266 (100.0)		
Income Category (per annum)						
R614,401 & above	1 (33.3)	1 (33.3)	1 (33.3)	3 (100.0)	**32 .444**	**0.001****
R76,401 – R614,400	17 (37.0)	21 (45.7)	8 (17.4)	46 (100.0)		
R1 – R76,400	9 (5.6)	102 (63.4)	50 (31.1)	161 (100.0)		
No Income	12 (21.4)	28 (50.0)	16 (28.6)	56 (100.0)		
Total	39 (14.7)	152 (57.1)	75 (28.2)	266 (100.0)		

**** = statistically significant**

Table 4.14 shows that at uMhlathuze Local Municipality, there was no statistically significant association between overall waste recycling behaviour and overall recycling attitude among the respondents that either separated waste for recycling and those who did not (P>0.05). Unlike the study conducted in U.S.A by Schultz, Oskamp, and Mainieri (1995) which revealed personal and situational factors towards waste recycling, this study revealed that relevant specific attitudes correlate with recycling behaviour. However, the socio-demographic variables tested indicated that there is statistically significantly associated with gender, nationality and current employment at uMhlathuze Local Municipality.

Recycling behaviour is still generally poor among both groups, although relatively better among the respondents who reported to be separating waste for waste recycling than those who did not.

Table 4.14: Association between separation of waste for recycling and overall recycling behaviour of respondents

Variables	RECYCLING BEHAVIOUR			Chi square	P-value
	Good	Poor	Total		
	Freq. (%)	Freq. (%)	Freq. (%)		
Respondents who separate waste for recycling					
Positive	22 (46.8)	25 (53.2)	47 (100.0)	**0.017**	**0.896**
Neutral	4 (44.4)	5 (55.6)	9 (100.0)		
Total	26 (46.4)	30 (53.6)	56 (100.0)		
Respondents who do not separate waste for recycling					
Positive	7 (17.9)	32 (82.1)	39 (100.0)	**2.568**	**0.277**
Neutral	41 (27.0)	111 (73.0)	152 (100.0)		
Negative	24 (32.0)	51 (68.0)	75 (100.0)		
Total	72 (27.1)	194 (72.9)	266 (100.0)		

4.4 Summary

Based on the above results, the following key issues and conclusions are raised in this chapter. The result showed that the overall recycling behaviour of the majority of the respondents (69.6%) had poor overall recycling behaviour. These results therefore show that the citizens of uMhlathuze Local Municipality generally did not practice waste separation at source.

Also, the results revealed that the citizens of uMhlathuze Local Municipality had positive and negative attitudes which were influenced by environmental concerns. For example, 75% of those

who recycled waste agreed that they felt that they were making a difference in conserving the environment. Then again, the results revealed that those who recycled waste were not necessarily influenced by the financial benefits of recycling waste, as 35.7% and 48.2% of them strongly disagreed and disagreed, respectively, with the statement that they were motivated to recycle because of financial benefits.

The respondents who did not separate waste for recycling showed that most of them had a generally negative attitude, of which they were not willing to separate waste and also thinking there was no value in recycling waste. Therefore, citizens with poor recycling behaviour, who were, according to the results, mixing all waste or separate only when remembered, had negative attitude such that they did not think it was important to separate waste from source.

The results showed that the test of association out of all the socio-demographic variables tested, indicated that the respondents' overall recycling behaviour was statistically significantly associated with gender, nationality and current employment. Whereas, the overall recycling attitude among the respondents who did not recycle was statistically significantly associated with nationality and income category.

The results of this study revealed that recycling behaviour was generally poor among both those who recycled waste and those who did not. It was also noticed to be better than those who recycled waste than those who did not.

The next chapter will discuss the implications of these results for the objectives of this study.

CHAPTER 5

DISCUSSION

5. 1 Introduction

This chapter provides the discussion of the findings of the study. In Chapter 1, section 1.7, the following research objectives were highlighted: To identify the attitudes of citizens living in uMhlathuze Local Municipality towards waste recycling; to describe how the attitudes of citizens living in uMhlathuze Local Municipality affect their behaviour in favour of, or against waste recycling; and to establish the linkage between these individual attitudes and the behaviours of the citizens of uMhlathuze Local Municipality. Therefore, the findings of the study are discussed on the basis of these objectives.

5.1.1 To identify the attitudes of citizens living in ULM, towards waste recycling

The purpose of this objective was to identify the attitudes of the citizens of uMhlathuze Local Municipality. Sections C and D of the questionnaire were generated to gather information for this objective. Attitude was defined as the tendency of an individual to evaluate object or aspects of his world in a favourable or unfavourable manner. The attitudes were assessed in both those who recycled waste and those who did not.

The description of the recycling attitude among the respondents who separated waste for recycling shows that most of them had a generally positive attitude towards waste recycling, as they felt they were making a difference in conserving the environment by recycling waste. But as per the results of this study, their attitudes were influenced mostly by environmental factors and not economic factors. For instance, the result show that 75.0% of the respondents that recycled waste agreed with the statement that they felt that they were making a difference in conservation of their

environment by separating waste for recycling. However, 35.7% and 48.2% of the respondents who recycled waste strongly disagreed and disagreed respectively, with the statement that they were motivated to recycle because of its financial benefit.

These results correspond with the findings by Jekria and Daud (2016) that attitude has proved to be a significant predictor of recycling behaviour, if the person has an environmental concern. Also, Mavropoulos (2017) had similar findings that those who are conscious of the effects of environmental problems feel morally obliged to participate in behaviours that they believe will have a tangible effect on the global and local environment.

The respondents also showed that they got satisfaction by taking part in waste recycling. According to the functional theory, people develop favourable attitudes towards things that aid or reward them. According to Carpenter et al. (2013) people may develop an attitude that expresses values that are important to them. Therefore, waste recycling express values that are important, which is to conserve the environment and as a result, the respondents who recycled waste had positive attitudes towards waste recycling.

On the other hand, the finding that people who recycled waste were not motivated by financial benefit is in contrary with the study conducted by Bolaane (2006) in Gaborone, as well as the study by Holmes et al. (2014) who suggested that incentives enhance citizens' participation in waste recycling. However, the two studies focused on incentivising citizens with formal recycling. Formal recycling is a waste recycling formalised by the local municipality like the two-bag system and drop-off centres, whereas in the informal recycling, citizens collect recyclables on the streets to sell to the end user for income purposes. The results are different because there are no incentive schemes implemented by the ULM. This suggests that citizens who did not engage in informal recycling were not motivated by financial benefit.

The description of the recycling attitude among the respondents who did not separate waste for recycling shows that most of them had a generally negative attitude towards waste recycling. They believed that waste recycling was time consuming. Furthermore, these people were not bothered by mixing recyclable with non-recyclables. Interestingly, they believed that waste recycling was for the unemployed people. The results in this study showed that 68.4% agreed that they did not feel guilty for not separating waste for recycling because they did not understand why it was

important, while 71.1% of them agreed that they were not worried seeing waste going to the landfill site.

From these results, it can be highlighted that the citizens of ULM knew about recycling, but due to ignorance, they had wrong perceptions about waste recycling. These finding are similar to those of Omran et al. (2009), which revealed that even though awareness campaigns are conducted, unconvinced citizens may believe that their participation in waste recycling would not make a difference. This type of individuals may need more persuasion to recycle. Drawing from self-perception theory, Crisp and Turner (2014) argue that one's attitudes from behaviour are more likely to occur when someone does not hold a strong prior belief towards attitude object. Therefore, the citizens of ULM did not hold strong beliefs towards waste recycling behaviour.

In this study, the result showed that 68.4% of the citizens were discouraged by the absence of waste collection system, that is, they did not know where to place the recyclables. Therefore, another contributing factor to the negative attitude was the poor collection of recyclables by the local municipality officials. The evidence of this finding was also noticed from the areas selected for this study. For instance, 53.8% of the respondents from Meerensee where colour coded bags were implemented showed good recycling behaviour, while 68.8% and 74.9% of those from Aquadene and Esikhawini, respectively, had poor recycling behaviour. Knussen, Yule, MacKenzie, and Wells (2004) suggest that there is some evidence that people will not recycle if it is difficult to dispose of items, even if they feel that they have the ability to do so. Burn (1991) also revealed that attitude-behaviour correspondence is increased when the consistent behaviour is easy and less costly to perform. Better accessibility of recycling facilities is one of the best means of promoting positive attitudes towards waste recycling (Omran et.al., 2008).

A study in the City of Johannesburg by Nwokedi (2011) also concluded that waste collection problems contribute to low levels of recycling. Guerrero et al. (2013) revealed that waste separation programs are hampered by the lack of equipment for the collection of sorted materials and the absence of decision makers who are interested in environmental issues. Therefore, both positive and negative attitudes are influenced by beliefs, values, environmental concerns and resource availability.

5.1.2 To describe how the attitudes of the citizens living in UM affect their behaviour in favour of, or against waste recycling.

The purpose of this objective was to describe how attitudes identified among the citizens of uMhlathuze affect their behaviour in favour of, or against waste recycling.

The results of this study show that most respondents did not adhere to the right recycling behaviour. For instance, 36.0 % and 55.0% of the respondents strongly disagreed and disagreed respectively, with the statement "*I separate recyclable waste for every waste collection*". Looking across all the other statements relating to recycling behaviour, they mostly either strongly disagreed or disagreed with the positive statements. However, those who had positive attitudes towards waste recycling showed that they separated waste for recycling.

According to the Theory of Planned Behaviour (TPB) model, behavioural intentions are preceded by attitudes which reflect the individual's positive or negative appraisal of a behavioural option. The theory of planned behaviour model suggests that people who have a positive attitude towards environmental protection will have positive attitude towards waste recycling (Mosquera ,2012). Therefore, this study confirms the TPB theory, as it is revealed that those who have positive attitude towards waste recycling are those who recycle waste. This means that the intention to recycle is supported by positive attitudes towards recycling.

Furthermore, the TPB model asserts that intention is preceded by perceived behavioural control, which refers to the ease or difficulty of performing the behaviour. The effect of perceived behavioural control has been observed from the results of this study. The results indicate that the citizens from Meerensee had a good recycling behaviour. This was the only area with the two colour coded plastic bags and designated drop off centres. Therefore, it was easier for them to separate waste because they were provided with the necessary resources to do so.

It is noteworthy that results from this study revealed that there was certain behaviour for particular race, regarding waste recycling behaviour. For example, White participants had an overall positive attitude towards waste recycling, even those who did not separate waste for recycling. On the other hand, the African participants had a generally negative attitude towards waste recycling, irrespective of who separated or did not separate waste. This finding corresponds with the study

by Jekria and Daud (2015), who found that family, friends, neighbours or colleagues influence the positive environmental behaviours such as recycling and conservation.

The study also revealed that the participants from middl- income and high-income earners had a positive attitude towards waste recycling. This finding is similar to the finding by Becker (2014), Zhang et al., (2015), who concluded that socio- demographic parameters such as income and cultural aspects influence recycling behaviour. Another study by Kamar (2006), on the City of Tshwane, also concluded that wealthier households had a higher level of participation in domestic waste sorting and suggested this was because the households were in areas well-served by waste management facilities. In addition to this, higher levels of education and better knowledge of waste recycling also influence waste recycling behaviour in these households.

The dissonance theory predicts that when an individual holds two or more elements of knowledge that are relevant to each other, but inconsistent with one another, a state of discomfort is created and that state is dissonance (Zentall, 2010). According to Gawronski and LeBel (2008), this theory suggests that one of most basic human motives is the desire for personal consistency. In order to achieve a state of cognitive consistency, people change their personal attitudes, their behaviours, or the personal importance of an attitude object. Therefore, for the municipalities to implement recycling programs, it is important to consider convenience.

5.1.3 To establish the linkage between the individual attitudes and the behaviours of the citizens of ULM

There was no statistically significant association between overall waste recycling behaviour and overall recycling attitude among the respondents that either separated waste for recycling and those who did not ($P>0.05$). Recycling behaviour was still generally poor among both groups, although relatively better among the respondents who reported to be separating waste for waste recycling than those who did not. While those who recycled were driven by their environmental concern, it was clear that their level of recycling was affected by the availability of resources. As such, 68.4% and 24.1% of the respondents agreed and strongly agreed respectively, with the statement "*I am discouraged to separate waste because no one collects the recyclables even if I place them in*

separate bags". Therefore, inadequate recycling facilities within the uMhlathuze contributed to poor recycling behaviour. Therefore, this suggests that there are other contributing factors that contributed to the poor recycling behaviour. Several studies suggest that without facilities, resources, awareness, incentives or policies, recycling behaviour is poor. For example, a study conducted in Nigeria by Otitoju (2014) revealed that it is difficult to achieve an effective waste recycling initiative without the necessary bins, as well as a regular collection strategy. Residents might separate their recyclables, but when it is not timely or occasionally collected, the waste generators get discouraged. Similarly, Miafodzyeva and Brandt (2013) suggest that convenience factor is highly important in devising new technological changes in source separation and collection schemes for household waste to be widely accepted by the public. Bolaane (2006) also adds that the absence of visible recycling centres is a limiting factor towards recycling behaviour of citizens.

Given the above, promotional programmes that highlight how recyclables should be managed and then ensure availability of recycling facilities can enhance the perceived behavioural control of the individuals. For example, the majority of the respondents who did not recycle waste strongly agreed with the statement that "*I don't separate waste because I don't know which waste for recycling and where to place them after separation".* This finding is similar with that of Miafodzyeva and Brandt (2013), who also noted that the lack of information can have significant negative impact on recycling behaviour. In a similar vein, Anderson, Romani, Wentzel and Philips (2013) also found that people's attitude towards recycling has a direct relationship with their level of education, how much they know about the environment, its values and the need to protect those values. Therefore, availing waste management services without adequate environmental education may in itself not succeed in ensuring mass participation from the public (Kamar, 2006). It is therefore evident that the limited knowledge and understanding of why recycling of waste is important is a contributing factor to poor waste recycling behaviour among the citizens of uMhlathuze Local Municipality in KwaZulu-Natal Province.

It is therefore key to highlight that incentives also play a part in influencing positive recycling behaviour. Thus, an incentive can be anything (monetary or non-monetary) that motivates a person to undertake a particular action or choose one alternative instead of another. For example, *Pay As You Throw* has been viewed to offer the best prospect of cost-effective incentivising residents to

reduce residual waste and increase recycling in Germany (Manni and Runhaar, 2014, Wahabu et al., 2014). Countries such as the UK have also implemented household incentives as effective ways to engage with householders and encourage them to recycle waste (Widdowson, 2014).

5.2 Summary

This chapter discussed findings of the results, on the basis of the objectives of the study. The objectives formulated to answer the research question were namely; to identify the attitudes of citizens living in uMhlathuze Local Municipality, towards waste recycling behaviour; to describe how the attitudes of citizens living in uMhlathuze Local Municipality affect their behaviour in favour of, or against waste recycling; as well as to establish the linkage between these individual attitudes and the behaviours of the citizens of uMhlathuze Local Municipality. In this chapter, each of these objectives has been discussed, based on the results of the study and in relation to relevant literature. The next chapter therefore provides indications of whether the research questions have been answered and also provides the conclusions and recommendations, based on the findings of the study.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter provides an indication as to whether the study has been able to achieve its aim and whether it has answered the research questions. It therefore covers the conclusion, implications of the study, limitations of the study and recommendations to solve the problem statement, as well as the recommendations for future studies and then the summary of this chapter.

6.2 Conclusion

This quantitative study focused on the attitudes of the citizens of uMhlathuze Local Municipality towards waste recycling behaviour. Stratified, random and convenient sampling methods were used to get 322 respondents from the three suburbs of the uMhlathuze Local Municipality: Meerensee, Aquadene, and Esikhawini. A structured questionnaire was distributed to the citizens of the three selected suburbs of the uMhlathuze Local Municipality, to collect data which were analysed using descriptive and inferential statistics. A summary of the results is presented below, according to the research objectives.

6.2.1 To identify the attitudes of citizens living in uMhlathuze Local Municipality towards waste recycling behaviour

It has been established through the literature review, that attitudes are either positive or negative. This study assessed the attitude of both the citizens who recycled waste and those who did not. The findings of the study revealed that the citizens who recycled waste had positive attitudes towards waste recycling behaviour, because they had an environmental concern. The study also found that those who did not, also had a negative attitude towards waste recycling behaviour because even though they knew about recycling, they did not understand why recycling was important.

6.2.2 To describe how the attitudes of the citizens living in uMhlathuze Local Municipality affect their behaviour in favour of, or against waste recycling

The findings of the study revealed that recycling behaviour is generally poor for both those who recycled and those who did not recycle waste. However, it was noted that those who recycled waste had a general concern about the environment, which resulted in good recycling behaviour. It was also established that the poor recycling behaviour was due to in adequate recycling resources. Some of the citizens who had a positive attitude towards waste recycling were hindered by the lack of access to recycling resources and facilities. It was less surprising that there were citizens who recycled at work or at varsity, because of availability of recycling facilities such as the colour coded bins, which were provided.

6.2.3 To establish the linkage between the individual attitudes and the behaviours of the citizens of uMhlathuze Local Municipality

There was no statistically significant association between overall waste recycling behaviour and overall recycling attitude among the respondents who either separated waste for recycling and those who did not ($P>0.05$). However, there were several factors associated with the recycling behaviours identified through literature review. Those factors included the availability of resources, incentives, awareness and the absence of polices. The next section focuses on the recommendations and implications of the study.

6.3. Recommendation

The following are the recommendations arising from this study:

6.3.1 Educational campaigns that promote the value of waste recycling

To enhance waste recycling behaviour among the citizens of uMhlathuze Local Municipality, there is a need to initiate environmental campaigns to change and reinforce favourable attitudes and behaviours towards recycling behaviour. This is key, as citizens' recycling behaviour change if

citizens can believe that recycling has significant role in protecting the environment. Therefore, ULM needs to design and implement environmental education campaigns directed at the general public in order to increase their environmental knowledge, through deep communal introspection regarding the values and ethical conduct that need to be promoted in order to induce changes in individual behaviour awareness in broad sense of protection of the environment.

6.3.2 Implement by-laws and penalties that will enforce waste separation

It is important to change the behaviour of the citizens of ULM who are accustomed to mixing waste towards good recycling behaviour, not only through voluntary means, but also through by-laws and enforcement.

The implementation of by-laws will enforce citizens to separate waste, thus causing dissonance to the citizens. The dissonance can be resolved in one of the three ways: First, people can simply change the beliefs. Second is to change action, people can decide not to do the particular action or lastly, to change perceptions of action. Therefore, the dissonance caused by by-laws will push the citizens to change from the current belief of mixing waste, and then start action of separating, then perception will eventually be changed.

6.3.3 Incentives to encourage participation

The introduction of incentives such as the *Pay As You Throw* (PAYT), which has proven to change people's attitudes and behaviour can be helpful to enhance recycling behaviour, as the case has been in some developed countries such as Germany and the United Kingdom. This system, coupled with the penalties is recommended for ULM. This will prevent the citizens not to be defiant towards the implementation of penalties as this will benefit the citizens.

6.3.4 Convenient recycling resources to improve the culture of recycling among the citizens

ULM needs to ensure that there are not only adequate, visible recycling facilities, but also convenient recycling resources to encourage citizens to recycle waste. Furthermore, the municipality needs to implement regular collection strategy to avoid discouragement of citizens in practising positive recycling behaviour. Curb side collection, whereby households will be issued colour coded containers for waste separation, then municipalities collect the waste containers along the road with a prescribed container, would help to not only change citizens attitudes, but also enhance waste recycling behaviour in ULM.

6.4 Areas for future research

There are number of focus areas that this study was unable to focus on, in detail. In this regard, future studies could focus on the following:

- Exploring the efficacy of incentives in waste recycling in rural municipalities in African settings
- As municipal workers play a key role in ensuring waste collection, an exploration of their attitudes towards the collection of separated waste bags is important.

6.5 Summary

This quantitative study has provided insights into municipal leaders, on the attitudes upheld by citizens regarding waste recycling. It is important that any municipal effort to influence not only attitudes, but also waste recycling behaviour of the citizens in municipalities in South Africa, should not only focus on educational campaigns to inform, but also incentives to encourage participation. Municipalities in South Africa also have a role in shaping the attitude and behaviours of citizens through the provision of facilities, resources and reinforcement of by-laws and penalties. As municipal workers play a key role in ensuring waste collection, an exploration of their attitudes toward collection of separated waste bags is important. Future research also needs to focus on the efficacy of incentives in waste recycling in rural municipalities, especially in African settings.

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APPENDIX 1: RESEARCH QUESTIONNAIRE

SECTION A: DEMOGRAPHIC DETAILS

In this section, we would like to find out or know a little more about you. You are requested to put a cross(x) in the number corresponding with your answer.

A1. Please indicate your age category

19 - 35	1
36 - 45	2
46 – 55	3
56 – 65	4
66 or older	5

A2. Please indicate your gender

Male	1	Female	2

A3. Please indicate your Nationality

African	1
Indian	2
White	3
Coloured	4

A4. Please indicate your employment status

Employed	1
Unemployed	2
Self-employed	3
Retired	4
Student	5

A5. Please indicate your income category (Per annum)

R614 401 and above	1
R76 401 - R614 400	2
R1 – R76 400	3
No income	4

A6. Please indicate your area

Meerensee	1

Aquadene	2
Esikhawini	3

A7. Please indicate nature of dwelling

Flats with garden	1
Flats with no garden	2
House with garden	3
House with no access to the garden	4
Other	5

SECTION B: RECYCLING BEHAVIOUR

This part of questionnaire is designed to assess your recycling behaviour. To what extent do you agree with following statements, please make a cross (x) in appropriate block.

1 = Strongly disagree
2 = Disagree
3 = Neither agree nor disagree
4 = Agree
5 = Strongly agree

B1	I separate recyclable waste for every waste collection	**1**	**2**	**3**	**4**	**5**
B2	I only separate waste for recycling when I remember	**1**	**2**	**3**	**4**	**5**
B3	I separate everything that is recyclable	**1**	**2**	**3**	**4**	**5**
B4	I separate some of the things that are recyclable(i.e paper only, bottles only, cans only or plastics only)	**1**	**2**	**3**	**4**	**5**
B5	I separate recyclables to exchange them for cash	**1**	**2**	**3**	**4**	**5**
B6	I use food or organic waste for composting	**1**	**2**	**3**	**4**	**5**
B7	I only separate waste when I am at work or varsity, because separate bins are provided for waste separation	**1**	**2**	**3**	**4**	**5**
B8	I encourage my friends and neighbours to separate recyclable waste	**1**	**2**	**3**	**4**	**5**
B9	I enquire / research about new methods of waste recycling	**1**	**2**	**3**	**4**	**5**

B10	I do not separate recyclable waste (I mix waste in one bag for municipal collection)	**1**	**2**	**3**	**4**	**5**

Do you separate your waste for waste recycling? **YES** or **NO** _____

*If **YES** please answer **Section C***

*If **NO** Please answer **Section D***

SECTION C: RECYCLING ATTITUDES - THE PERSON WHO SEPARATE WASTE FOR WASTE RECYCLING

This part of questionnaire is designed to assess your attitude towards recycling. To what extent do you agree with following statements, please make a cross (x) in appropriate block

1 = strongly disagree

2 = Disagree

3 = neither agree nor disagree

4 = Agree

5 = strongly agree

C1	I get satisfaction by taking part into waste recycling	**1**	**2**	**3**	**4**	**5**
C2	I feel I am making difference in conserving our environment	**1**	**2**	**3**	**4**	**5**
C3	I am motivated to recycle because it has a financial benefit	**1**	**2**	**3**	**4**	**5**
C4	I am motivated to take part in recycling because resources are available.	**1**	**2**	**3**	**4**	**5**
C5	I believe recycling of waste help in litter problems	**1**	**2**	**3**	**4**	**5**
C6	I separate waste for recycling because my neighbours or friends separate their waste	**1**	**2**	**3**	**4**	**5**
C7	I grew up my family separating waste for recycling, it is normal to me to separate waste for recycling	**1**	**2**	**3**	**4**	**5**

C8	I separate waste for recycling because our Local Municipality encourages us to do so	**1**	**2**	**3**	**4**	**5**

SECTION D: RECYCLING ATTITUDE - PERSON WHO DO NOT RECYCLE WASTE

This part of questionnaire is designed to assess your attitude towards recycling. To what extent do you agree with following statements, please make a cross (x) in appropriate block

1 = strongly disagree

2 = Disagree

3 = neither agree nor disagree

4 = Agree

5 = strongly agree

D1	I know about waste recycling but waste separation is time consuming (I'd rather mix waste to save time)	**1**	**2**	**3**	**4**	**5**
D2	I don't separate waste because I don't know which waste for recycling and where to place them after separation	**1**	**2**	**3**	**4**	**5**
D3	I do not feel guilty for not separating waste for recycling because I don't understand why it is important	**1**	**2**	**3**	**4**	**5**
D4	Waste separation is perfect for unemployed people	**1**	**2**	**3**	**4**	**5**
D5	There is no personal benefit from recycling waste	**1**	**2**	**3**	**4**	**5**
D6	I do not separate waste because none of my neighbours or friend separate their waste for recycling	**1**	**2**	**3**	**4**	**5**
D7	I am discouraged to separate waste because no one collects the recyclables even if I place them in separate bags	**1**	**2**	**3**	**4**	**5**
D8	I do not separate waste because it is unhygienic to separate waste	**1**	**2**	**3**	**4**	**5**
D9	It does not worry me to see waste going to the landfill site	**1**	**2**	**3**	**4**	**5**
D10	I always postpone to start separating the waste for recycling	**1**	**2**	**3**	**4**	**5**

THANK YOU

APPENDIX 2: ETHICAL CLEARANCE LETTER

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

11 December 2017

Ms Gcobisa Gloria Feke (215080723)
Graduate School of Business & Leadership
Westville Campus

Dear Ms Feke,

Protocol reference number: HSS/0291/017M
New Project Title: An exploration of citizen's attitudes Towards Waste Recycling within the Umhlathuze Local Municipailty in KwaZulu-Natal Province

Approval notification – Amendment Application

This letter serves to notify you that your application for an amendment dated 9 December 2017 has now been granted **Full Approval** as follows:

- **Change in Title**

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study must be reviewed and approved through an amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years

The ethical clearance certificate is only valid for a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

Best wishes for the successful completion of your research protocol.

Yours faithfully

[redacted]

Dr Shenuka Singh (Chair)
Humanities & Social Sciences Research Ethics Committee

/pm

Cc Supervisor: Dr M Kanyangale
Cc Academic Leader Research: Dr Muhammad Hoque
Cc School Administrator: Ms Zarina Buliyraj

Humanities & Social Sciences Research Ethics Committee
Dr Shenuka Singh (Chair)
Westville Campus, Govan Mbeki Building
Postal Address: Private Bag X54001, Durban 4000
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Website: www.ukzn.ac.za

APPENDIX 3: PERMISSION TO CONDUCT RESEARCH

CITY OF
uMHLATHUZE
VISION INTO ACTION

5 Mark Strasse Civic Centre
Business District
Private Bag X1004
Richards Bay 3900
E: reg@umhlathuze.gov.za
T: 035 907 5000
F: 035 907 5444/5/6/7
Toll Free No: 0800 222 827
www.umhlathuze.gov.za

Your ref:
Contact: **Mr Zilindile Masango**

Our file ref: **5/1/4**
In response to DMS No: **1192597**
Date: **13/03/2017**

Miss Gcobisa G. Feke
Graduate School of Business
University of KwaZulu Natal
DURBAN
4000

Dear Miss Feke

RE: PERMISSION TO CONDUCT RESEACH WITHIN THE CITY OF UMHLATUZE

Gatekeeper's permission is hereby granted for you to conduct research within the uMhlathuze Municipality for your Master's degree, provided Ethical clearance has been obtain with the UKZN. We note the title of your research project is:

"AN EXPLORATION OF CITIZENS ATTITUDES TOWARDS THE WASTE RECYCLING WITHIN THE CITIZENS OF UMHLATHUZE MUNICIPALITY"

It is noted that you will constitute your sample by randomly handing out questionnaire to the residents of uMhlathuze Municipality in the following arears

1. Meerensee,
2. Aquadene, and
3. eSikhaleni

Please ensure that the following appears on you questionnaire

- Ethical clearance number
- Research title and details of the researcher and the supervisor
- Consent form is attached to the questionnaire to be sign by the resident before he /she fills in questionnaire
- Gatekeeper's approval by the Municipality.

Please note that the data collected must be treated with due confidentiality and anonymity

Yours faithfully

[redacted]

DR NJ SIBEKO
MUNICIPAL MANAGER
1192597

ALL CORRESPONDENCE MUST BE ADDRESSED TO THE MUNICIPAL MANAGER

APPENDIX 4 : CONSENT LETTER (ZULU)

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Ucwaningo lwe MBA

Umcwaningi: Gcobisa G. Feke (0827762124)

Umphathi: Dr. M. Kanyangele 031-2607934

Ihhovisi locwaningo: Ms P Ximba 031-2603587

Sakhamuzi esihloniphekileyo,

Mina Gcobisa Gloria Feke, ngingumfundi kwizifundo ze MBA kumkhakha weGraduate School of Business and Leadership kwiNyuvesi yakwaZulu- Natal (UKZN), ngiyakumema ukuthi ubambe iqhaza kulolu cwaningo olulandelayo: **Ukuphenya ngemizwa yezakhamuzi zikamasipala waseMhlathuze ngokuhlukanisa udoti ongasetsheziswa nodoti ongenokusetshenziswa**, phecelezi , ***An exploration of citizen's attitudes towards waste recycling within the uMhlathuze Municipality***.

Ukubamba iqhaza kulolu cwaningo akusiyo impoqo, ungahoxisa noma inini. Akukho nzuzo oyitholayo ngokuzibandakanya kulolu cwaningo. Imniningwane yakho ngalolu cwaningo izogcinwa iyimfihlo yisikhungo se Graduate School of business and leadership senyuvesi yakwaZulu- Natal. Uma unemibuzo noma izinkinga ngokugcwalisa lolu cwaningo ungaxhumana nami noma nomphathi wami kulezinombolo ezingenhla.

Ucwaningo luzothatha imizuzu eyishumi nanhlanu (15)ukugcwalisa noma ukuphendula imibuzo. Ngiyethemba ukuthi uzojabulela ukuba yingxenye yalolu cwaningo.

Ozithobayo,

_____ _____

Gcobisa Feke Usuku

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Ucwaningo lwe MBA

Umcwaningi: Gcobisa G. Feke (0827762124)

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Ihhovisi locwaningo: Ms P Ximba 031-2603587

Ukunikeza ingunya

Mina (amagama akho ngokugcwele)---------- Ngiyavuma ukuthi ngiyakuqonda okubhalwe kulolu cwaningo, futhi ngiyavuma ukubamba iqhaza kulolu cwaningo. Ngiyazi ukuthi nginelungelo lokuhoxisa noma inini kulolu cwaningo njengokuthanda kwami.

_____ _____

ISAKHAMUZI USUKU

APPENDIX 5: CONSENT LETTER ENGLISH

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

MBA Research Project
Researcher: Gcobisa G. Feke (082 7762124)
Supervisor: Dr. M. Kanyangale 031-2607934
Research Office: Ms P Ximba 031-2603587

Dear Respondent,

I, **Gcobisa Gloria Feke** an MBA student, at the Graduate School of Business and Leadership, of the University of KwaZulu Natal invite you to participate in a research project entitled: **An exploration of citizen`s attitudes towards waste recycling within the uMhlathuze Local Municipality in KwaZulu-Natal Province** . The aim of this study is to: **Establish the attitudes of citizens of the UM towards waste recycling**.

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this survey. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Graduate School of Business and Leadership, UKZN.

If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me or my supervisor at the numbers listed above.

The survey should take you about 15 minutes to complete. I hope you will take the time to complete this questionnaire.

Sincerely

Investigator's signature_____ Date_____

This page is to be retained by participant

UNIVERSITY OF KWAZULU-NATAL

GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

MBA Research Project
Researcher: Gcobisa G. Feke (0827762124)
Supervisor: Dr. M. Kanyangale 031-2607934
Research Office: Ms P Ximba 031-2603587

CONSENT

I……(full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT DATE

……

This page is to be retained by researcher