URBAN HOUSEHOLDS' WILLINGNESS TO PAY FOR IMPROVED SOLID WASTE MANAGEMENT SERVICES IN KITWE TOWN COUNCIL, NTUNGAMO DISTRICT

BY

MATTHEW ATWINE TUMUSHABE

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DECLARATION

I, Matthew Atwine Tumushabe, do declare that this dissertation is my original work and has never been presented wholly or partially to any institution for my academic award or any other purpose and all processes of work that were used have been acknowledged.

Signed..... Date.....

APPROVAL

This dissertation submitted by Matthew Atwine Tumushabe for examination is with our approval as supervisors.

Signed.....

Date.....

Dr. Edgar Mwesigye Kateshumbwa

Signed.....

Date.....

Mr. Lugemoi. Wilfred Bongomin

DEDICATION

This dissertation is dedicated to my dear wife, Beteth Ayebazibwe Tumushabe who sacrificed and secured me money to buy a new computer replacing my crushed computer that enabled me successfully to write the research proposal and finally dissertation report.

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I really take this opportunity to register my appreciation to the academic staff of the UMI who facilitated the 28th intake of MMS programme for their matter-of-fact and lively lectures. Further, I would like to pay special tribute to Dr. Edgar Mwesigye Kateshumbwa and Mr. Wilfred Bongomin Legomoi, the supervisors of my dissertation report the work they exemplary did.

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Finally, I do acknowledge the observations and possible errors in this dissertation report are exclusively my liability.

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ACRONYMS

FIWTP	Factors influencing Willingness to Pay
KTC	Kitwe Town Council
MMSPAM	Master's in Management Studies specializing in Public Administration and Management
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
NEMA	National Environmental Management Authority
SW	Solid Waste
SWM	Solid Waste Management
SWMS	Improved Solid Waste Management services
UMI	Uganda Management Institute
WTP	Willingness to Pay

ABSTRACT

This study investigated how the urban household's willingness influenced to pay for improved solid waste services in Kitwe Town Council of Ntungamo district. The purpose of this study was to assess the urban households' willingness to pay for improved solid waste management services received and in Kitwe Town Council. The objectives of the study included, to examine extent on how income levels, education levels, gender, quantity of solid waste and maximum daily charges affected willingness to pay for improved solid waste management services in KTC. The research employed multi stage sampling techniques to select one hundred sixty four households, five primary schools' head teachers, two secondary schools' head teachers, four eating houses' managers, two market tenderers, three medical clinics in- charges, three grains milling machines/factories' managers and two bakery managers from the study area. The Pearson Chi-square and linear ratio used estimated and revealed that the income (P=0.002) education (P=0.018) and amount of maximum charges paid (P=0.000) of the household head was significantly associated with the willingness to pay for solid waste management services. Other variables of gender (P=0.090) and quantity of solid waste generated (P=0.216) were not significantly associated with the willingness to pay for improved solid waste management services. The study concluded that dimensions of income levels, education levels and maximum charges paid influenced the willingness of respondents to pay for improved solid waste management services. The study recommended that Kitwe Town Council authorities should promote behavior change of mind set on perception of being poor to afford user charges and back yard agriculture using manure from solid waste in order to ensure minimization of solid waste generated by urban households. The study recommended further study in other sister Town Councils within Ntungamo district to produce comparable results.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This study examined how urban households' willingness influenced to pay for improved solid waste management services in Kitwe Town Council, Ntungamo District. The independent variable (IV) which is factors influencing willingness to pay (FIWTP) and dependant variable (DV) is willingness to pay (WTP). The independent variable is defined as income levels, education levels, gender, and quantity of volume of waste and maximum daily charges. While dependent variable is defined by yes or no for willingness to pay for improved solid waste management services (SWMS).

This chapter presents the background to the study, the statement of the problem, the purpose of the study, the objectives of the study and the research questions. This chapter further presents the hypotheses, the scope of the study, the significance, justification and operational definition of terms and concepts used throughout the study.

1.2 Background to the Study

1.2.1. Historical Background

Garbage is increasingly becoming a big problem in many cities of the world and Kitwe Town Council is no exception. According to the United Nations Environment Programme (UNEP 2004), solid waste generation is an increasing global environmental and public health problem.

According to Katusiimeh, 2012; Niringiye & Omortor, 2010; Uganda Urban Policy draft ([2013]) they observe that in growing urban centres in Africa, solid waste management (SWM) remains one of the most conspicuous and challenging environmental problems.

This state of affairs has attracted intense debates from scholars and practitioners on how best to organize SWM, especially in relation to whether it should be provided by the public sector or private sector (Mugagga, 2006). In most cases public sector provision takes the form of providing solid waste collection services free of charge and raising general revenues through other ways.

With increased urbanization, there is a growing interest in solid waste management in urban areas among researchers and policy makers and implementers. Indeed in both developed and developing countries have faced challenges of solid waste management as a result of population increase living in cities, municipal councils as well as growth trading centres that renders most of daily generated solid waste un collected (Niringiye & Omortor, 2010, Guerrero, Maas & Hogland, 2013; Aklilu, 2002; ([KTC Minutes, August, 2013]). Due to lack of appropriate planning, inadequate governance, resource constraint, and ineffective management, solid waste, especially insufficient collection and improper disposal of it, is a major concern for many rapidly growing cities in developing countries. According to Chuen-Khee & Othman, 2011, Medina, 2010; Wang, Kim and Kamata, 2011; and Public Private Partnerships for Local Governments (2010) emphasize that municipal SWM continues to be a major challenge for local governments in both urban and rural areas across the developing world, and that one of the key issues is their financial constraints. I must also point out that this effort is however confronted by daunting capacity challenges ranging from inadequate human resource to low revenue base.

According to study by Ekere (2010) states that waste management constitutes one of the most crucial health and environmental problems facing local governments in Uganda. It further found out that in the Lake Victoria crescent region, Kampala residents generate over 1,500 tons of waste per day (Ekere et al., 2010).

Nonetheless, a small fraction is collected due to budget constraints (Ekere et al., 2010).High generation volumes could be because the households do not pay the full social costs of waste disposal (Ekere et al., 2010).

This is in agreement with findings which attributed poor solid waste management to financial constraints of local governments in Africa in general and Uganda in particular (Ojok, 2012). The rapid rate of urbanization and high urban population growth rates as a result of rural-urban migration and the demand for food stuffs marketed in raw form have resulted into generation of high volumes of waste that constrains the urban council's inadequate finances as Kitwe Town Council is not exceptional (Ekere et al., 2010).

The questions that arise in the researcher's mind are; what factors determine SW generators motivation to pay? This study was therefore done to assess the factors influencing the willingness to pay for improved solid waste management services in the study area.

1.2.2 Theoretical Background

The study was guided by the decision-making theories (Ward, 1954). However, the researcher applied the two underpinning theories; the Etzioni's Rational Comprehensive Model and Lindblom's Incremental theory both cited in Donald (1995). The literature reviewed has shown that choice and behaviour represent the core characteristics of decision-making phenomena and involve the processes of thinking and reacting. "*A decision is a response to a situation and comprehends judgment, expectations, and evaluation*" (Oliveira, 2007, p.16; Donald, 2013). The study related theories of decision making (Ward 1954) on willingness to pay (WTP) and amount to pay for the improved solid waste management services (SWMS) in Kitwe Town Council. These theories were relevant in providing explanations on willingness to pay (WTP) and amount to pay for the improved solid waste management services (SWMS) in Kitwe Town Council.

1.2.3 Conceptual background

The Etzioni's RCM, cited in (Donald, 1995) assumes that the decision maker can identify the problem, that the decision maker's goals, values, and objectives are clear and ranked in according with their importance, that alternative ways of addressing the problem are considered, that the cost and benefits or advantages and disadvantages of each alternative are investigated, that alternatives and their consequences can be compared with other alternatives, and that the decision maker will choose the alternative that maximizes the attainment of his or her goals, values, and objectives. This theory guided the study in examining factors that affect WTP for SWMS in KTC basing on the decisions that will be made by the Solid waste (SW) generators who include households, schools, medical clinics, markets, eating houses, bakeries, commercial premises and factories (Schübeler, 1996; Post, 2007; Ojok, 2012; Katrina, 2007). The solid waste management services / practices include generation, collection, transportation, treatment and final disposal of solid waste (Katrina, 2007; Wang; Lu Dong, Zhou, 2006).

Households' willingness to pay (WTP) for better solid waste management services, depend upon a number of important determinants. In this study, HH's factors influencing WTP was treated as the independent variable (IV) while WTP was taken on as the dependent variable (DV), (Niringiye & Omortor, 2010).

1.2.4 Contextual background

Kitwe Town Council was established on 1st July 2011 as a town council when Kitwe Town Board was elevated to a lower local government council status that is a body corporate that can sue or be sued in its own name (Local Government Act, Cap. 243, ([Uganda National Urban Policy Draft 1, 2013]).

As provided for under second schedule part three of the Local Government Act, cap 243, the decentralized services provided by Kitwe Town Council include but not limited to; provision of safe drinking water, provision and maintenance of access roads , and provision of inspection of primary schools. Other services provided include collection, transportation and disposal of solid waste generated within KTC.

The improper disposal of solid waste may result into outbreak of diseases especially during rainy seasons. These diseases may result from uncollected piles of refuse which serve as food and breeding grounds for vectors of diseases like flies and mosquitoes to mention a few. Uncollected and uncared for SW blocks water and open drains during heavy rains that leads to blocked drains that may further result into serious flooding. Also improper dumping of SW leads to contamination of ground water as a leachate from crude dumping finds its way to ground water, consequently affects most poor people living in poor urban areas; as most of these residents' source of water is shallow wells or protected springs which are easily contaminated by leachate. Municipal councils in general and KTC in particular, are struggling to collect, transport, treat and dispose of SW to reduce or minimise its effects.

KTC'S vision is "*having an urbanized centre, well educated, healthy, productive and wealthy population in a conducive environment by 2025*" ([KTC Development Plan FY 2010/2011-2014/2015]). To achieve the above mentioned vision it has endeavored to manage SW to its level best in terms of available resources ([KTC budgets FY 2011/2012, FY 2012/2013]).

Table 1. 1: Overall tones of solid waste disposed of and its cost

Year	Planned tons of SW	Actual disposed of	Percentage	Cost (UGX.) '000
2011	12,000	4,800	40	4,800
2012	36,000	24,000	67	24,000
2013	65,000	36,000	55	36,000
Total	113,000	64,800	57	64,800

***Source*:** KTC budgets FY 2011/2012, FY 2012/2013, KTC General Purpose Committee's Minutes and Reports FY 2011/2012 & FY 2012/2013**.**

The table 1.1 indicates performance of SW collection and disposal for period of 2011-2013. In 2011 only 4,800 tons (40%) of SW was disposed of leaving 60 % uncollected. For 2012 slightly above half the targeted 36,000 tons (67%) was removed leaving behind 33% of uncollected SW. And in 2013 despite high target of 65,000 tons, only 36,000 tons (55%) was collected for final disposal that indicates failure to remove 45% of the SW within KTC.

Overall performance during the period of 2011-2013 was 57% of SW removed. This trend portrays that KTC is inefficient and ineffective to collect and dispose of all the generated SW that renders residents to suffer poor sanitation related diseases and living in unhealthy environment.

1.3 Statement of the problem

Among roles and responsibilities of lower local governments devolved by central government in Uganda under implementation of decentralisation policy, solid waste management is a responsibility of Kitwe Town Council as stipulated in the Constitution of Republic of Uganda, 1995, objective, XXVII, clause (1), Local Government Act Cap, 243, second schedule part 3 and Public Health Act, Cap 281, sec 55.

Kitwe Town Council provides solid waste management services that involve collection, transport and transfer of solid waste and final disposal of solid waste as evidenced by the implemented budgets of fiscal years of 2011/2012 and 2012/2013.

The solid waste management was initially managed through public-private –partnership (PPP) with registered companies using procurement as per regulation 142 of the (PPDA), 2006.

In December 2012, Ministry of Local Government, Uganda, supplied solid waste management equipments to urban local governments including Kitwe Town Council that received a tractor with a trailer for transporting the generated solid waste from households

replacing the public private partnership (PPP) method of solid waste management to cut increased cost of removal of solid waste to the authorities.

The collection and transfer of SW disposal could not be more than twice a week due to financial constraint yet more solid waste remain uncollected from homes, streets, and markets ([Council Minutes of June 2013]). Solid Waste management still remained a herculean task to the council authorities as it had not been able to manage and deal with waste problem to the expected level of it. This inefficient solid waste management was generating the problems of soil and water pollution that in recent past culminated into diarrhoeal diseases like dysentery outbreak. Also the ineffective solid waste management led to demonstrations by business community that discredits the council leadership ([Council Minutes of June 2013]).

Despite the efforts put in solid waste management no effective strategy to increase financial resources to adequately dispose of SW timely had been put in place. This identified gap was the focus of this study in order to provide financial stability and effective recovery of all costs associated with provision of improved solid waste management services (Local Government Act cap.243, under Fifth Schedule).

1.4 Purpose of the study

The purpose of this study was to assess the urban households' willingness to pay for improved solid waste management services received and in Kitwe Town Council.

1.5 Objectives of the study

The objectives of the study were the following:

I. To examine the extent to which income levels influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council

II. To examine the extent to which education levels influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council

III. To examine the extent to which gender influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council

IV. To examine the extent to which quantity of solid waste generated influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council

V. To examine the extent to which maximum daily charges influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council.

1.6 Research Questions

The research questions were formulated in accordance with the objectives mentioned above;

I. To what extent do income levels influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council?

II. To what extent do education levels influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council?

III. To what extent do gender influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council?

IV. To what extent do quantity of solid waste generated influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council?

V. To what extent do maximum daily charges influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council?

1.7 Hypotheses of the study

The following hypotheses guided the study:

I. Income levels of the household heads significantly influence willingness to pay for improved solid waste management services in Kitwe Town Council.

II. Education levels of the household heads significantly influence willingness to pay for improved solid waste management services in Kitwe Town Council.

III. Gender of the household heads significantly influences willingness to pay for improved solid waste management services in Kitwe Town Council.

IV. Quantity of solid waste generated by the household heads significantly influences willingness to pay for improved solid waste management services in Kitwe Town Council.

V. Maximum daily charges paid by household heads significantly influences willingness to pay for improved solid waste management services in Kitwe Town Council.

1.8 The Conceptual framework

The conceptual framework shown in figure 1.1 is composed of the independent variable (IV) which is factors influencing willingness to pay (FIWTP) and dependant variable (DV) is willingness to pay (WTP). The independent variable is defined as income levels, education levels, sex, and quantity of volume of waste and maximum daily charges while dependent variable is defined by yes or no for willingness to pay for improved solid waste management services (SWMS). Figure 1.1 illustrates the conceptual framework.

Factors Influencing WTP for SWMS

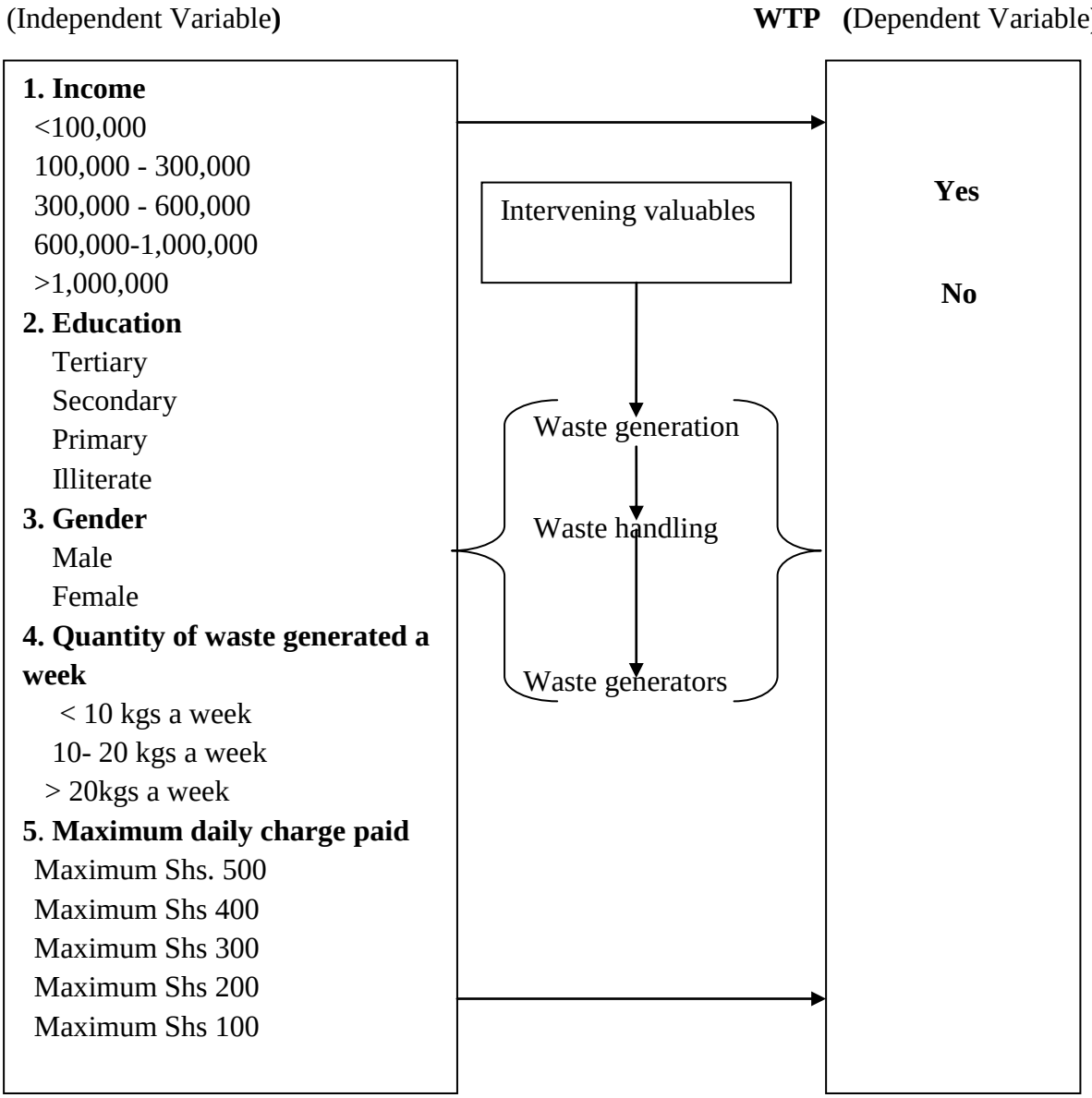

Figure 1. 1: Conceptual framework showing urban households' willingness to pay for improved solid waste management services in KTC

Source: The conceptual frame work was developed with ideas from (Klundert& Anschutz, 2001, Niringiye & Omortor, 2010, Awunyo, 2013, Katrina.R, Naeem. Khan, Ahamad, 2009, Ward, 1954, Donald, 1995 Schubeler, 1996, Oso &Onen, 2009).

The figure 1.1 shows the relationship between the variables whereby the independent variables affect the dependent variable. It shows the cause/effect relationship. It shows that improved solid waste management services influences urban households' willingness to pay.

1.9. Significance of the study

The study will go a long way to guide on levying user charges for improved solid waste management serves (SWMS) by the Kitwe Town Council (KTC) authorities. Further the findings will guide residents of KTC to live in a clean environment with minimum transmission of sanitation related diseases. Also the study findings would help in designing the relevant tools by decision makers of KTC in reducing financial constraint towards implementing improved SWMS (Aklilu, 2002). The study findings would help in identifying factors that affect willingness to pay (WTP) for improved solid SWMS in the study area. Furthermore the study results were expected to stimulate further studies in the area (WTP) for improved SWMS. This study was a requirement to fulfil completion of a Master's degree in Management Studies (Public Administration and Management) under School of Management Sciences of Uganda Management Institute (UMI).

1.10 Justification of the study

This study is a unique one being carried out first time in Kitwe Town Council whereas similar studies were carried elsewhere.

This study was grounded in providing evidence of possibility to levy user charges in bridging the gap of financial constraint towards providing timely, efficient and effective solid waste management services in Kitwe Town Council.

1.11 Scope of the study

The scope of the study covered geographical scope, time scope and content scope.

1.11.1 Geographical Scope

The study was carried out in Kitwe Town Council located in Ruhama constituency of Ntungamo District that is 42 kilometres along Ntungamo- Kikagate Road and borders directly with the Republic of Tanzania and Rwanda along Kegera and Ekyambu Rivers.

Two out of six wards of Central and Omukibare respectively were sampled as the study population due to financial and time constraint by the researcher.

1.11.2 Time Scope

The study focused on how solid waste management was being managed for period of fiscal years of 2011/2012- 2012/2013, since the Kitwe Town Council became into existence on 14th July 2011 when the Kitwe Town Board was upgraded to town council status (Statutory Instruments 2012 No. 5) that is a lower government which has corporate rights of being sued or sue in its corporate name (Local Government Act, cap.243).

1.11.3 Content scope

The study focused on the factors that determine households' willingness to pay as an independent variable and willingness to pay as dependent variable for improved solid waste management services.

Further the study assessed the dimensions that fall under the independent and dependent variables that include but not limited to household's income, education status of head of household /respondent, sex, quantity of waste generated and maximum daily charges.

1.12 Operational Definitions

The key terms and concepts used in the study are operationalised hereunder.

1.12.1 Income levels

This variable referred to the various individual head of household earned monthly income from all sources whether formal or informal of the household head in terms of Uganda shillings. It was expected that income would affect the WTP. The assumption was that the haves would be more WTP than the have-nots.

1.12.2 Education levels

This covered education status one had attained. The levels of education attained were graded as being illiterate, studied primary, secondary or tertiary level. It was assumed that the longer an individual stayed in formal education system, the more likely that he/she was willing to pay for improved solid management services.

1.12.3 Gender

The variable referred to in the study research stood for social constructed roles for males and females in the household. During the study its female respondents who were anticipated to be more willing to pay as they are socialised to clean house and dispose of solid waste among other roles.

1.12.4 Quantity of Waste Generated

This variable stood for the amount of solid waste generated by household in a week's time. The unit of measure for this study was a full synthetic bags ("akadeya") of 10 kilograms commonly used as waste bins in Kitwe Town Council households. The hypothesis was that the more solid waste generated, the storage at the household became inadequate and hazardous to the family members as it will attract vermin and rodents as well as emitting foul smells, such households will be WTP to remove unwanted waste**.**

1.12.5 Maximum Daily charges

This variable referred to amount in Uganda shillings affordable by household heads to pay as user charges for improved solid waste management services (SWMS) in Kitwe Town Council.

1.12.6 Willingness to Pay (WTP)

This variable referred to a likelihood of household head able to pay a user fee towards improved solid waste management services in the study area.

1.12.7 Solid waste Management services (SWMS).

This variable referred to waste generation that involved its source, storage, composition, quantity, separation and minimisation of solid waste. Also the variable referred to waste handling that comprised of collection, transport, treatment and disposal of solid waste.

1.12.8 Waste generation

This variable is comprised of source, storage, composition, quantity, separation and minimisation of solid waste generated by households and other generators in Kitwe Town Council.

1.12.9 Waste handling

This variable is comprised of collection, transport, treatment and final disposal of solid waste generated by households and other generators in Kitwe Town Council.

1.12.10 Waste generators

This variable is comprised of residential houses, markets, commercial premises slaughterhouse, medical facilities, bakeries, schools and eating houses.

1.12.11 Solid waste

This variable referred to the residuals of a households' or institutions' activities right from the kitchen to the compound in Kitwe Town Council.

The solid waste generated at household level included but not limited to food waste, biodegradable materials/ organic material (e.g. banana peelings/leaves, grass) non-biodegradable waste materials like polythene bags, plastics, glass and metals.

1.12.12 Household

This variable referred to members living in one house or in same compound but ate food from the same pot during previous night to interviewing date.

1.12.13 Eating houses

This variable referred to all those facilities that offered something to eat or drink. These included restaurants, hotels, tea rooms, roasted meat/pork/chicken joints and food vending within Kitwe Town Council.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presented the theoretical and conceptual review on households' willingness to pay for improved solid waste management services and it's arranged in sub-sections according to the objectives of the study. The study was guided by the decision-making theories (Edwards, 1954, Donald, 1995). Among other theories in guiding this study included Rational Comprehensive Model (RCM) and incremental Theories.

2.2 Theoretical Review

Many areas of human knowledge have extensively researched decision-making theories. The literature indicated that choice and behaviour represent the core characteristics of decision-making phenomena and involve the processes of thinking and reacting. "*A decision is a response to a situation and comprehends judgment, expectations, and evaluation*" (Oliveira, 2007. p.16). The study was guided by theories of decision making especially incremental theory that considers alternatives available prior decision making (Edwards, 1954, Donald, 1995) on willingness to pay for the improved solid waste management services in Kitwe Town Council. Theories of decision making include but not limited to the rational comprehensive model, the incremental theory and mixed scanning.

2.2.1 The Rational Comprehensive Model (RCM)

This Etzioni's Rational Comprehensive Model, cited in Donald, 1995, assumes that the decision maker can identify the problem that the decision maker's goals, values, and objectives are clear and ranked in according with their importance. That alternative ways of addressing the problem are considered, that the cost and benefits or advantages and disadvantages of each alternative are investigated. Further, it denote that alternatives and their

consequences can be compared with other alternatives, and that the decision maker will choose the alternative that maximizes the attainment of his or her goals, values, and objectives. Nonetheless problems faced by decision makers whether at personal or organisational level are never obviously defined thus rationalism may not hold to the warranting situation at hand. The believers of this theory assert that decision makers need to have at hand immeasurable amounts of information in order to make use of the rational comprehensive decision-making technique.

Further this assertion of RCM underrates existence of other alternatives for the decision maker cannot simply ignore because of existing conflicting values. Actually this model presumes that there is a lone decision maker ignoring many other stake holders who are to be involved.

Donald (1995) asserts that the incremental decision theory is based on belief that decision makers rely greatly on their experience rather than available information as claimed in RCM and therefore consider only action courses marginally different from actions previously taken. The researcher would not solely premises the study on this RCM because of its short comings thus prefers the incremental theory that tries to address the gaps mentioned above.

2.2.2 The incremental Theory

Lindblom's incremental theory as elaborated by Donald (1995) embraces the selection of goals and objectives are intertwined with not distinct from the scientific analysis of the problem. Decision makers only consider alternatives for dealing with a problem that differs marginally (incrementally) from existing policies (suggesting that they do not completely remake policy every time they make a policy decision, but instead refashion existing policy). For each alternative, only important consequences are considered.

Problems confronting the decision maker are continually redefined. Constant ends-means and, means-ends adjustments are made to better manage policy. Seldom are there ever single decisions or totally correct solutions available to resolve a problem. A good decision is one that policy makers can agree on, not one that may be most appropriate for an agreed objective. Incremental decision-making is remedial, not holistically-devised or future-oriented.

The researcher benefited from this incremental theory in appreciating building on other people's work but not to re-invent the wheel in studying WTP for improved SWMS in Kitwe Town Council.

There was a contradicting finding about willingness to pay for solid management services in Kampala city by Niringiye and Omortor (2010) and Banga, Razaak and Lokina (2011) while the previous researchers' assert that there was little chance for households to pay for improved solid waste management services in the latter's findings it was found that households were willing to pay for improved solid waste management services. Thus incrementally building on these researchers' findings, the variables and dimensions (figure-1.1) used was part of the study that had not ever been carried out in Kitwe Town Council in particular and Ntungamo district at large.

2.3 Conceptual Review

2.3.1 Willingness to pay for improved solid waste management services

According to Awunyo et al. (2013), found out major drawbacks of Solid Waste Management (SWM) in the city being financial problems due to inadequate funding and poor cost recovery. Also Schübeler (1996) found out that the main option for financing recurrent municipal solid waste management (MSWM) costs are user charges, local taxes, and intergovernmental transfers, clear preference was given to user charges.

The researcher found out the financial problems as a drawback to SWM in Kitwe Town Council as asserted by Okot-Okumu, Nyenje (2011) who found out that low levels of locally generated revenues, and the restrictions on the grants from the central government, limit solid waste management activities. Further the researched looked at factors determining the WTP that included, household income levels, education levels, sex and quantity of waste generated and maximum daily charge households' willing to pay, for improved solid waste management services (Awunyo, (2013).

2.3.2 Income

According to Niringiye and Omortor (2010) their study revealed that household expenditure did not significantly influence WTP for improved solid waste management services in Kampala City of Uganda. Other studies revealed that varying peoples' incomes significantly showed WTP for improved solid waste management (Ojok, Koech, Trale &, Okot Okumu, 2013; Banga and Razaak, 2011; Awunyo, (2013).That those respondents with higher income were more willing to pay for improved solid waste management services than their counter parts with lower or no income. The researcher examined income variations among respondents' how it affected willingness to pay for SWMS.

2.3.3 Education

The previous studies revealed that education status of the respondents had significant influence on WTP for improved solid waste management services (Awunyo, 2013, Niringiye & Omortor, 2010). Awunyo (2013) states that the longer period the individual spent in formal education system the higher likelihood the head of house hold was WTP for improved solid waste management services are in agreement with Niringiye & Omortor (2010). The studies observed that the longer length of respondents spent in school the higher WTP for improved solid waste management services.

2.3.4 Gender

This variable was found to influence household's willingness to pay for solid waste management by previous studies (Awunyo, (2013). The females were more willing to pay for improved solid waste management since in most African societies like in Ghana are responsible for cleaning homes (Awunyo, 2013). Indeed in the study area like any other African society females do take up role of cleaning homes. The **s**tudy therefore premised on the females being more WTP for improved solid waste management services.

2.3.5 Quantity of waste generated

Municipal Solid Waste (MSW) is defined to include refuse from household waste, non-hazardous solid waste from industrial, commercial and institutional establishments (including hospitals), market waste, yard waste, & street sweepings (Schübeler,1996). Other studies by (Post, 2007; Ojok, 2012; Katrina 2007; Huang, et al (2006) indicated that solid waste being comprised of food waste ,paper, plastics, metal scrap, glass ,textile, agricultural waste and construction waste.

The results reveal that the biggest proportion of respondents (46.34%) generates less than 10kg, followed by those who generated 10-20kg (35.37%) and the least were those who generated more than 20kg (18.29%). The findings revealed that those generating less than 20 kg of waste were more willing to pay than their counter parts producing over and above 20 kg. This finding is in agreement with previous studies that showed volume of waste generated had a positive and considerable relationship with the amount of money to pay for improved solid waste management services (Awunyo, 2013). That those who generated larger volume of waste had more problems with disposal thus were WTP for improved solid waste management services.

In the study carried out by Katrina, 2010, found out that the mean amount of domestic solid waste generated was not less than 2kgs per person per day. The study assessed the most generated solid waste in Kitwe Town Council for ease of separation for final disposal. The researcher considered the volume of wastage generated to being a factor influencing WTP towards improved solid waste management in Kitwe Town Council.

2.3.6 Maximum daily charges households' willing to pay

The reviewed literature reveals varying amounts respondents are willing to pay for improved solid waste management services. In the findings of Awunyo, (2013) in Ghana recommended payment of Ghana's Cedi currency of GHC 3-5 the equivalency of $1.37- 2.28 in Kumasi metropolis for improved solid waste management services. For study carried out in Kampala city by Ojok, Koech, Tole & Okumu (2013) found out that the respondents were willing to pay per month was UGX.100 (USD.0.054) and the maximum at UGX.70,000 (USD.37.04). For the study by Niringiye & Omortor (2010) recommended having attempts made in introducing user charges to improve WTP for improved solid waste management services in Kampala despite their findings indicating little chance to pay by the respondents.

Basing on the earlier studies reviewed above the study was to find out how much respondents were willing to pay as user charges for improved solid waste management services in Kitwe Town Council as supported by legal authority in the Local Government Act cap.243, under Fifth Schedule in order to provide financial stability and effective recovery of all costs associated with provision of improved solid waste management services.

2.4 Summary

The literature reviewed above raised valuable input in bringing out variables like income, education, sex, quantity of SW generated, and maximum daily charge paid that pointed to the vital contribution of studying willingness to pay for improved solid waste management

services. The literature had some gaps and would not provide full explanations to factors that determine willingness to pay for improved solid waste management services. Previously done studies indicate varying variables influencing WTP for improved solid waste management services.

The study by Niringiye & Omortor (2010) revealed little chance to pay for improved solid waste management in Kampala city despite recommending having attempts to be made to improve WTP for SWM in the city. Whereas, studies carried out by (Ojok et al, 2013; Bang & Lokina (2011) in the same city 48.1%- 57% of respondents were WTP for improved SWMS. Nonetheless both studies showed that insufficient financial resources were a major challenge to effectively manage solid waste to the satisfaction of the city residents. The researcher was to premise the study on what influences WTP for improved solid waste management services to address problem of insufficient financial resources.

The literature reviewed, reveals lessons learnt from previous studies that included the 3Rs (reduce, recycle, reuse) in achieving improved solid waste management services that would be promoted in the study area. The other lesson learnt from this study was reasons given by respondents not willing to pay. The reasons included where there was no waste management services provided, those disposing their generated waste around homes, persons believing that waste management was the responsibility of government and individuals not taking it as a priority.

The findings of different researchers were fundamental in this study nevertheless could not be definite for Kitwe Town Council since no study of this sort had been carried out to this effect a gap this study aims to fill up. The study applied research methodology in chapter three that spells out the road map to collecting the data for preceding chapters of fourth and fifth in the final report of the dissertation.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The methodology chapter encompasses research design, study population, sample size and selection, sampling techniques, data collection methods and instruments, data quality control procedure of data collection, data analysis and measurement of variables. It as well spells out the problems anticipated during the study.

3.2 Research design

The study adopted a correlational study, a cross-sectional survey design and a case study design using both qualitative and quantitative approaches (Hancock & Algozzine, 2006). The correlational study helped the researcher to delineate the important variables associated with the research problem Sekaran(2003) and the cross-sectional survey design, being descriptive in nature was preferred for this study to collect data at once because the research took a short time (Amin, 2005; Kumar, 2010). Besides, a case study was used and aimed at understanding the willingness to pay for solid waste management services in Kitwe Town Council better without having to generalize the findings to others. The study used both qualitative and quantitative approaches because it sought for explanations and analysis of opinions through, among others, interviews, and questionnaires (Ojok et al., 2013). With the help of quantitative approaches, it was easy to have a clear and scientific view on the opinions by having them on questionnaires and analyzed with Statistical Package for Social Scientists (SPSS) version 17.0.

3.3 Study population

The population is the complete collection of all the elements or units that are of interest during the study (Amin, 2005).

The study population included two hundred forty six household heads ,seven primary schools' head teachers, two secondary school head teachers, fifteen eating houses' managers ,four market tenderers', ten medical clinics in -charges, ten grains milling machines/factories 'managers and six bakery managers within Kitwe Town Council totalling to 300 ([Community Based Management Information System register, 2012])

3.4 Determination of the Sample size

Table 3. 1: Showing sample section and techniques

Category	**Study Population**	**Sample Size**	**Selection Technique**
Household heads	246	164	Simple random sampling
Primary schools' head teachers	7	5	Simple random sampling
Secondary school head teachers	2	2	Census
Eating houses' managers	15	4	Simple random sampling
Market tenderers	4	2	Simple random sampling
Medical clinics in charges	10	3	Simple random sampling
Grains milling machines/factories' managers	10	3	Simple random sampling
Bakery managers	6	2	Simple random sampling
TOTAL	**300**	**185**	

Source: Primary data

3.5 Sampling techniques and procedure

A multi stage sampling techniques was employed to select one hundred sixty four households, five primary schools' head teachers, two secondary schools' head teachers,

four eating houses' managers, two market tenderers, three medical clinics in- charges, three grains milling machines/factories' managers and two bakery managers from the study area (Oso & Onen, 2009, Niringiye , 2010, Huang et al., 2005).

The purposive sampling techniques was used where by two wards were selected out of six one being more urbanised and the other being semi-urbanised respectively of Kitwe Town Council ((Oso & Onen,2009; Niringiye , 2010). The two wards purposively selected were Central ward being more urbanized and Omukibare ward less urbanized respectively. Stratifying the selected wards into income groups to ensure were proportionately represented was using quality of housing since there was little formal way of stratification of incomes of the Kitwe Town Council inhabitants (Oso & Onen, 2009).

Pearson Chi-square test and linear ratio was used during the study to establish the factors influencing willingness to pay for sound solid waste management services in Kitwe Town Council (Ekere et al, 2010; Niringiye, 2010).

3. 6 Data collection methods

The researcher collected data from both primary and secondary data sources using various data collection methods. Data were collected through, questioning, interviewing methods and documentary reviews as espoused by Niringiye, 2010; Ekere eat al, 2010; Okot-Okumu & Nyenje (2011) in order to collect reliable information on willingness to pay for improved solid waste management services within Kitwe Town Council.

3.6.1 Interviews

Face to face interviews were used on the primary and secondary head teachers, market tenderers, eating houses managers, grain millers' managers and medical clinical in-charges as the method has advantage of eliciting individual experiences, opinions and feelings. Thus, the researcher used this method to be able to get these from the respondents.

3.6.2 Questionnaire survey method

Questionnaire survey method was used on household heads respondents. It had an advantage of covering a large number of respondents and was less expensive.

Using this method, the researcher was able to cover all the respondents quickly and cheaply. The method helped to collect data in a short time since the researcher was dealing with a literate population who filled questionnaires and sent them to the researcher.

3.6.3 Documentary review method

Documentary review method was used to help in extracting data from documents in the Inspectorate of Government (IG). The above methods were handy in getting the information from the respondents and that was why they were used in data collection.

3.7 Data collection instruments

The data collection instruments used included questionnaires, interview and documentary review guides.

3.7.1 Interview Guide

This instrument had open ended questions was used to collect qualitative data from primary and secondary schools' head teachers, eating houses' managers, medical clinics in-charges, grains milling machines/factories' managers and bakery managers so as to get in-depth data to complement collected quantitative data. The interview guide was used to in-depth and rich narrative data which was not possible to obtain when using questionnaires this is in agreement with views by (Mugenda & Mugenda 2003). Further in-depth interviews used because it was easier to fully understand someone's impressions or experiences or learn more about their answers to questions (Yako & Onen, 2009). Thus this method had advantage of eliciting individual experiences, opinions and feelings from the respondents/ interviewees.

3.7.2 Questionnaires

The questionnaires were administered to heads of households because information was obtained fairly, easily and questionnaire responses were easily coded (Amin, 2005). The self administered questionnaires are popular with respondents because they fill them at their own convenience since they are literate and appropriate for large samples (Yako & Onen, 2009). Collecting data using questionnaire had an advantage of covering a large number of respondents and it was less expensive. Using this method, the researcher was able to cover all the respondents quickly and cheaply. The method helped to have data collected in a short time.

According to Amin(2005) interview questions guide during interviews helped in getting opinions and feelings of key informants like head teachers of schools and managers of eating houses in Kitwe Town Council. The researcher thus finds this method having advantage of eliciting individual experiences, opinions and feelings.

3.7.3 Documentary review

Documentary review instrument was also used. It helped in extracting data from existing documents that were not readily published. Thus the method provided data not easily captured during the literature review.

3.8 Validity and reliability

3.8.1 Validity

The instruments used were pretested to determine their validity and reliability on the data to be collected. For acceptability of use of an instrument, data was collected with instruments serving the purposes for which they are intended and measuring what it intended to measure consistently after repeated trials (Amin, 2005; Mugenda & Mugenda, 2003).

The content validity index (CVI) was used to test the validity of the instruments. Validity of instruments was made certain by discussing the questionnaires; interview questions/guides about their content and construct validity with the supervisors and experts in area of study. The number of items ticked relevant by all experts were summed up and divided by the total number of questions in the questionnaire and key informant guide. Then the researcher computed the CVI i.e. the measure of the proportion of items in an instrument judged by the different judges was as computed below.

$$CVI = \frac{\text{Total items rated relevant by judges}}{\text{Total number of items in the instruments}} = CVI = 46/65 = 0.70269$$

According to Amin (2005) you need a CVI of 0.7 to be sure that the instrument would collect valid data. The researcher also considered the comments made by the judges and proceeded to design the final instruments approved by supervisors that were used to collect the data.

3.8.2 Reliability

The researcher's reliability of instruments was ascertained by preliminary results derived from the pilot study. At least 11.83% of instruments were randomly selected and pre-tested to 20 respondents in order to evaluate data collected and then any other possible amendments were done for that reason.

Further, to ensure reliability of the instruments, the internal consistency method using Cranach's Alpha Reliability Coefficients was used since the questionnaire had more than three alternatives per question, Amin (2005) states that the reliability index of 0.7 is enough to guarantee reliability. The researcher found out that the reliability of the data collection instrument was okay, and the same instrument was used to collect data.

Table 3. 2: Showing Cranach's Alpha Reliability coefficients

S/No	Variables	Cranach's Alpha	No. items
01	Income	0.725	04
02	Education	0.893	10
03	Maximum charges paid	0.764	06
	All reliability statics	**0.794**	**20**

Source: primary data

3.9 Procedure of data collection

The researcher had in place a research proposal that was presented to supervisors for onward submission for approval by proposal defence panel of UMI where upon satisfactory presentation the researcher was given a no objection letter introducing researcher to collect data from the study area using the approved research instruments.

From there, the researcher delivered the transmittal letter from UMI to the Interim Town Council Chairperson of Kitwe who drafted another one to the intended respondents allowing them to give the researcher all the necessary information and co-operation.

The researcher carried out first pilot test of the instruments on 20 respondents and three experts for purposes of validating the instruments to make sure that they collected valid and reliable data. After this, research assistants were trained and, the questionnaires were distributed to the respondents.

An interview of key informants' was held. Information was also obtained from relevant documents reviewed. Data from instruments was coded, entered and edited, for consistency and easiness in quantitatively using Statistical Package for Social Sciences (SPSS) version 17.0

3.10 Data analysis

Quantitative data from instruments was presented in form of frequency tables, to give meaning interpretation of the findings of the study. For qualitative analysis, content analysis was used to edit the data from interviews to reorganise it into meaningful themes and shorter sentences that supplemented quantitative data that had concrete interpretation of the results.

3.11 Measurement of variables

The variables were measured using the Likert scale from 5 to 1. The scale was used to measure the answers. The value of the score for every question in table 3.3 was rated being strongly agree, agree, not sure, disagree and strongly disagree which was given rating as 5, 4, 3, 2 and 1 (Amin, 2005).

Table 3. 3: Distribution of respondents by their Willingness to Pay

Rating	**Willingness to Pay**	**No**	**Percentage**
5	Strongly agree	24	14.63
4	Agree	66	40.24
3	Not Sure	6	3.66
2	Disagree	51	31.1
1	Strongly Disagree	17	10.37
	Total	**164**	**100**

Source: Primary data

In table 3.3 questions were grouped accordingly. The researcher combined both strongly agree and agree to represent the respondents who were willing to pay while strongly disagree, not sure and disagree represented the respondents who disagreed.

3.12 Conclusion

Chapter three portrays the roadmap of how the study was carried out. It proposed the research design, study population, sample size and determination, data collection methods and instruments, data quality control, data collection procedures and measurement of variables. This chapter prepared for data collection, presentation, analysis and interpretation of results in chapter four using the road map mentioned above answering the research questions spelt out in Chapter one.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.1 Introduction

This study investigated the urban household's willingness to pay for improved solid waste services in Kitwe Town Council of Ntungamo district. The dimensions adopted in this study included: income and education levels, gender, amount of waste generated and amount of daily charges to pay.

The quantitative data collected using questionnaires was coded, entered into computer and computed and then treated to descriptive relational and inferential data analysis using SPSS Version 17.0., as per objectives of the study.

The qualitative data obtained from interviews was arranged into themes and coded there after prior being subjected to content analysis per objectives of the study.

4.2 The Response Rate

The response rate = $\frac{\text{Total number of tools received}}{\text{Total number of tools given out}} \times 100\% = 185/175 \times 100 = 95\%$

The study targeted 185 respondents and 175 (95%) were reached comprising of 164 house hold heads (100%), 3 head teachers (60%), 4 restaurant managers (100%), one market tenderer (50%), 2 medical clinic in-charges (66%), one grain miller (33%).

Table 4. 1: Response Rate of Category of Respondents

Category of Respondents	**Study Population**	**Sample Size (n)**	**Actual Response**	**Percentage (%)**
Household heads	246	164	164	100
Primary schools' head teachers	7	5	3	60
Secondary school head teachers	2	2	0	0
Eating houses' managers	15	4	4	100
Market tenderers	4	2	1	50
Medical clinics in charges	10	3	2	66
Grains milling machines/ store's managers	10	3	1	33
Bakery managers	6	2	0	0
Total	**300**	**185**	**175**	**95**

Source: primary data

For the household head responses was at 100% because more than 164 questionnaires were given out that covered up non response rate. And eating houses' responded at 100% rate because they were all present during the interview time. Unfortunately those found at bakeries and secondary schools were not delegated powers of the managers and head teachers respectively thus could not respond to interviews.

The overall response rate was 95% that is a good representation of the survey population which is over and above recommended response rate of 70 % (Amin, 2005). In essence, the findings of this research are more reliable.

4.3 Background Characteristics of Respondents

The background characteristics of the respondents were obtained to help the researcher to understand the nature of respondents that participated in the study research. The background characteristics included age group, location by ward and housing arrangement of respondents.

4.3.1 Respondents' Age Groups

The respondents were grouped into four age categories namely: 15-20 years, 21-35 years, 36-45 years and those above 45 years of age to ensure adult hood of respondents. Table 4.2 presents the distribution of respondents by age group.

Table 4. 2: Distribution of Respondents' Households by Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15-20	13	7.9	7.9	7.9
	21-35	82	50.0	50.0	57.9
	36-45	29	17.7	17.7	75.6
	above 45	40	24.4	24.4	100.0
	Total	164	100.0	100.0	

Source: Primary data

82 (50.0%) of respondents were in the 21-35 years age groups. Out of the 164 total number of respondents who answered the questionnaire 40(24.4%) were above 45 years compared to 29(17.7%) aged 36-45 years. The least (7.9%) age group reached was those aged between 15-20 years. This means that the respondents were of age bracket of 15years and above who qualified either to be able to answer questions or heads of households as ethically recommended in carrying out research.

The study revealed that most respondents were adults who could have founded families that were generating large volumes of solid waste bothering KTC to dispose of.

Further it is revealed that majority adults who could be in gainful employment to afford paying user charges for improved solid waste management services.

4.3.2 Respondents' Ward Location

The respondents' reached were from Central Ward and Omukibare Ward respectively. Omukibare Ward was less urbanised than Central Ward. There was less urban agriculture practiced by residents of Central Ward than their counter parts from Omukibare Ward. Table 4.3 shows the respondents' distribution by Ward.

Table 4. 3: Distribution of Respondents by their Ward

Ward	**n**	**Percentage**
Central	94	53.71429
Omukibare	81	46.28571
Total	**175**	**100**

Source: primary data

94(53.7%) of the total respondents reached were residents of Central ward where there was less urban agriculture being practiced whereas 81(46.3%) were reached in Omukibare ward where there was more urban agriculture being practiced. From the practiced found out there was more need for solid waste management services in Central ward than Omukibare ward.

4.3.3 Housing arrangement of respondents

The researcher made effort to inquire about respondents' housing arrangement. For instance, on whether respondents were living owned or rented or free housing or staying with a friend or relative. Figure 4.1 shows the respondents' housing arrangement.

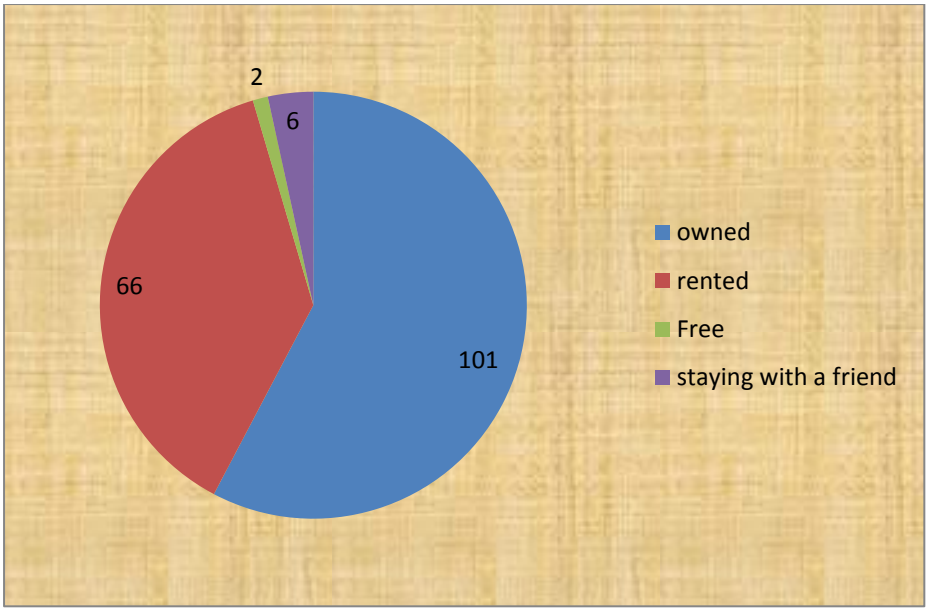

Figure 4. 1: Respondents' Housing Arrangement

The figure 4.1 indicates that 101(58%) respondents owned housing of their own while 66(38%) respondents rented their housing. For whose housing arrangement were either staying with the relatives or friends or free were 2(1%) and 6(3%).

Table 4. 4: Respondents' willingness to pay according to Housing arrangement

Housing arrangement	**Number of Respondents**	**willingness to pay**		**Percentage**	
		Yes	**No**	**Yes**	**No**
Owned	101	55	46	54.5	45.5
Rented	66	36	30	54.5	45.5
Free	2	1	1	50.0	50.0
Staying with a friend	6	3	3	50.0	50.0
TOTAL	**175**	**95**	**80**	**100.0**	**100.0**

Source: primary data

According to findings in table 4.4, respondents who owned or rented 54.5% of them were willing to pay for improved solid waste management services.

The respondents who either stayed in fee housing or staying with a friend 50% were willing to pay for improved solid waste management services in Kitwe Town Council. 46(45.5%) those who owned houses and 30(45.5%) proportionally were not willing to pay for improved solid waste management services whereas those who either had free or sharing housing with a friend 4(50%) were not willing to pay for Improved solid waste management services. This finding reveals a possibility to introduce user charges in provision of solid waste management services in Kitwe town Council.

4.4 Empirical Findings

The study focused on the urban households' willingness to pay for improved solid waste management services received in Kitwe Town Council. In this section, key responses in descriptive and inferential statistics are laid down to fully show the varying responses as were availed by respondents based on the objectives of the study.

4.4.1 To examine the extent to which income levels influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council

In order to examine the extent to which income levels influence of household heads' willingness to pay for improved solid waste management services in Kitwe Town Council(KTC), respondents were asked to reveal their income levels and give their view about their willingness to pay for improved solid waste management services. The elicited responses were cross tabulated and the findings are in table 4.5.

Table 4.5: Income levels of households versus Willingness to pay by heads of households in Kitwe Town Council

Income * Willingness to Pay Cross-tabulation			Willingness to Pay		Total
			No	Yes	
Income	Less than 100,000/=	Count	59	46	105
		% within Willingness to Pay	79.7%	51.1%	64.0%
	100,000 - Less than 300,000/=	Count	12	25	37
		% within Willingness to Pay	16.2%	27.8%	22.6%
	300,000 - Less than 600,000/=	Count	1	9	10
		% within Willingness to Pay	1.4%	10.0%	6.1%
	600,000 - Less than 1,000,000/=	Count	1	4	5
		% within Willingness to Pay	1.4%	4.4%	3.0%
	1,000,000/= and above	Count	1	6	7
		% within Willingness to Pay	1.4%	6.7%	4.3%
Total		Count	74	90	164
		% within Willingness to Pay	100.0%	100.0%	100.0%

Source: Primary field data

Table 4.5 shows that a total number of 74(45.1%) out of the sample of 164 respondents were not willing to pay for improved solid waste management services in Kitwe town council. The highest number of respondents not willing to pay, 59 (79,7%) were in the less 100,000/= income level, followed by the 100,000 – less than 300,000/= income level,12(16.2%), then the 300,000 – 600,000/= level, tallies with the 600,000- 1,000,000/= level and the 1,000,000/= and above level at 1(1.4%).One responding eating houses manager said, "*i cannot imagine spending little hard earned money on useless waste instead of using it to buy food stuffs and pay ever increasing house rent".*

Table 4.5 further shows that a total number of 90(54.9%) out of the sample of 164 respondents were willing to pay for improved solid waste management services in KTC.

The highest number of respondents willing to pay, 46(51.10%) were in the less 100,000/= income level, followed by the 100,000 – less than 300,000/= income level, 25(27.8%), then the 300,000 – 600,000/= level, 9(10%), 1,000,000/= and above level, 6(6.7%) and 600,000-1,000,000/= level 4(4.4%). The findings are collaborated by one of the responding market tenderers, who attested that, "only *poor people with low or no income do not mind living in un healthy and clean environment that is why they are living in 'Biafra' (slum) happily".*

4.4.1.1 Hypothesis Testing

The researcher proceeded to statistically examine whether income levels of household heads have a relationship with their willingness to pay for improved solid waste management services in Kitwe Town Council. The researcher was guided by the following hypothesis:

Hypothesis: Income levels of the household heads significantly influence willingness to pay for improved solid waste management services in Kitwe Town Council

The hypothesis was tested at a 95% level of significance (two-tailed) using Pearson Chi-square and Likelihood ratio, which measured the degree and direction of relationship between

income levels and willingness to pay for improved solid waste management services in Kitwe own council. This means that the significance of computed values were tested using a p-value of 0.025. The results are presented in the table 4.6.

Table 4.6: Income levels of Households versus Willingness to pay by heads in Kitwe Town Council

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.545[a]	4	.002
Likelihood Ratio	17.968	4	.001
Linear-by-Linear Association	13.498	1	.000
N of Valid Cases	164		

a. 5 cells (50.0%) have expected count less than 5. The minimum expected count is 2.26.

Table 4.6 shows that there is a significant relationship between income levels and willingness to pay for improved solid waste management services, Pearson Chi-Square =16.545, df=4, sig<0.025(=0.002). The likelihood ratio, further confirms the significant association between income levels and willingness to pay for improved solid waste management services, Likelihood Ratio = 17.968, df = 4, Sig<0.025(=0.001). The Linear-by-Linear Association of 13.498, df = 1, Sig<0.025(=0.000) implies that the association between income levels and willingness to pay for improved solid waste management services is linear in nature meaning the more the income level increases the more willingness a person is to pay for improved solid waste management services in Kitwe Town Council. One of the produce dealers/store's manager remarked,*" If all town residents were earning reasonably I do not see reasons for not paying at least five hundred shillings per day for ones waste collected"*.

In conclusion therefore the researcher accepted the hypothesis that was stated that: There is a significant relationship between income levels and willingness to pay for improved solid waste management services in Kitwe town council.

4.4.2 To examine the extent to which education levels influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council

In order to examine the extent to which education levels influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council, respondents were asked to reveal their education levels and give their view about their willingness to pay for improved solid waste management services. The elicited responses were cross tabulated and below are the findings. The findings are shown in table 4.7

Table 4.7: Education levels of households versus Willingness to pay by heads of households in Kitwe Ton Council

Education Level * Willingness to Pay Cross-tabulation			Willingness to Pay		Total
			No	Yes	
Education Level	Illiterate	Count	18	25	43
		% within Willingness to Pay	24.3%	27.8%	26.2%
	Primary	Count	38	34	72
		% within Willingness to Pay	51.4%	37.8%	43.9%
	Secondary	Count	10	15	25
		% within Willingness to Pay	13.5%	16.7%	15.2%
	Tertiary	Count	8	16	24
		% within Willingness to Pay	10.8%	17.8%	14.6%
Total		Count	74	90	164
		% within Willingness to Pay	100.0%	100.0%	100.0%

Source: Primary field data

Table 4.7 shows that a total number of 74(45.1%) out of the sample of 164 respondents were not willing to pay for improved solid waste management services in Kitwe town council. The highest number of respondents not willing to pay, 51.4% were of primary level of education, followed by illiterates, 24.3%, then by respondents of secondary level of education, 13.5%,

and then by tertiary level of education,10. 8%. One of the responding primary head teachers said, *"I know solid waste collection is the responsibility of Kitwe Town Council authorities*" While another respondent said*, "I think town council collects trading licence to use it manage solid waste otherwise what is the essence of paying it*". Table 4.5 further shows that a total of 90(54.9%) out of the sample of 164 respondents were willing to pay for improved solid waste management services in Kitwe town council. The highest number of respondents willing to pay, 37.8% were of primary level of education, followed by illiterates, 27.8%, then by respondents of tertiary level of education, 17.8%, and then by secondary level of education, 16.7%.The findings are harmonised by one eating house manager's reaction, who said, "*council collects our solid waste only twice a week due to inadequate funding, so if we are charged affordable fee, collection of garbage would be on a daily basis which is good practice and makes our town look clean".*

4.4.2.1 Hypothesis Testing

The researcher proceeded to statistically examine whether educational levels of household heads have a relationship with their willingness to pay for improved solid waste management services in Kitwe Town Council. The researcher was guided by the following hypothesis:

Hypothesis:. Education levels of the household heads significantly influence willingness to pay for improved solid waste management services in Kitwe Town Council

The hypothesis was tested at a 95% level of significance (two-tailed) using Pearson Chi-square and Likelihood ratio, which measured the degree and direction of association between education levels and willingness to pay for improved solid waste management services in Kitwe town council. This means that the significance of computed values were tested using a p-value of 0.025. The results are presented in the table below.

Table 4.8: Chi-square tests Values for education levels and Willingness to pay for improved sold waste management services

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.067[a]	3	.018
Likelihood Ratio	10.378	3	.016
Linear-by-Linear Association	7.787	1	.005
N of Valid Cases	164		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.83.

Table 4.8 shows that there is a significant association between education levels and willingness to pay for improved solid waste management services, Pearson Chi-Square =10.067, df=3, sig<0.025(=0.018).The likelihood ratio, further confirms the significant association, Likelihood Ratio = 10.378, df = 3, Sig<0.025(=0.016). The linear-by-Linear Association of 7.787, df = 1, Sig<0.025(=0.005) implies that the association between education levels and willingness to pay for improved solid waste management services is linear in nature meaning the more the education level increases the more willingness a person is to pay for improved solid waste management services in Kitwe town council.

Another primary school head teacher said, "*if waste generators were charged would have garbage ready for collection to avoid wasting council's time because failure to deliver waste on tractor on time would mean incurring extra cost to transport it oneself*".

In conclusion therefore the researcher accepted the hypothesis that was stated that: There is a significant association between education levels and willingness to pay for improved solid waste management services.

4.4.3 To examine the extent to which gender influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council

In order to examine the extent to which gender influences household heads' willingness to pay for improved solid waste management services in Kitwe Town Council, respondents were asked to reveal their gender roles and give their view about their willingness to pay for improved solid waste management services. The elicited responses were cross tabulated and below are the findings.

Table 4.9: Sex of households versus Willingness to pay by heads in Kitwe Town Council

Sex * Willingness to Pay Cross-tabulation			Willingness to Pay		
			No	Yes	Total
Sex	Male	Count	36	32	68
		% within Willingness to Pay	48.6%	35.6%	41.5%
	Female	Count	38	58	96
		% within Willingness to Pay	51.4%	64.4%	58.5%
Total		Count	74	90	164
		% within Willingness to Pay	100.0%	100.0%	100.0%

Source: Primary field data

Table 4.9 shows that a total number of 74(45.1%) out of the sample of 164 respondents were not willing to pay for improved solid waste management services in Kitwe town council.

The highest number of respondents not willing to pay, 38(51.4%) were females, compared to 36(48.6%) males shown above in table 4.7.Further table 4.7 shows the highest number of respondents willing to pay, 58(64.4%) were females, compared to 32(35.6%) males.

4.4.3.1 Hypothesis Testing

The researcher proceeded to statistically examine whether sex of household heads has a relationship with their willingness to pay for improved solid waste management services in Kitwe Town Council. The researcher was guided by the following hypothesis:

Hypothesis: Gender of the household heads significantly influences willingness to pay for improved solid waste management services in Kitwe Town Council.

The hypothesis was tested at a 95% level of significance (two-tailed) using Pearson Chi-square and Likelihood ratio, which measured the degree and direction of association between sex and willingness to pay for improved solid waste management services in Kitwe Town Council. This means that the significance of computed values was tested using a p-value of 0.025. The results are presented in the table 4.10.

Table 4. 10: Chi-square tests Values for sex and Willingness to pay for improved waste management services

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.868[a]	1	.090
Likelihood Ratio	2.869	1	.090
Linear-by-Linear Association	2.851	1	.091
N of Valid Cases	164		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 30.68.

Table 4.10 shows that there is no significant association between sex and willingness to pay for improved solid waste management services, Pearson Chi-Square =2.868, df=1, sig>0.025(=0.090).

The likelihood ratio, further confirms the non-significant association between sex and willingness to pay for improved solid waste management services, Likelihood Ratio = 2.869, df = 1, Sig>0.025(=0.090). The linear-by-Linear association of 2.851, df = 1, Sig>0.025(=0.091) implies that there is no linear association between sex and willingness to pay for improved solid waste management services in Kitwe Town Council.

This is supported by one of the grain miller's manager who said "*the waste scavengers and collectors of waste removed from back yard and carried to council's tractor or collection centre is carried out by young males than their counter parts females".*

In conclusion therefore the researcher rejected the hypothesis that stated that: There is a significant association between sex and willingness to pay for improved solid waste management services in Kitwe town council.

4.4.4 To examine the extent to which quantity of solid waste generated influences household heads' willingness to pay for improved solid waste management services in Kitwe Town Council

In order to examine the extent to which quantity of solid waste generated influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council, respondents were asked to reveal the amount of waste generated by households and give their view about their willingness to pay for improved solid waste management services. The elicited responses were cross tabulated and below are the findings.

Table 4. 11: Amount of waste generated by households versus Willingness to pay by heads in Kitwe Town Council

Amount of Solid Waste * Willingness to Pay Cross-tabulation			Willingness to Pay		Total
			No	Yes	
Amount of Solid Waste	Less than 10Kgs	Count	39	37	76
		% within Willingness to Pay	52.7%	41.1%	46.3%
	10 - 20Kgs	Count	21	37	58
		% within Willingness to Pay	28.4%	41.1%	35.4%
	Over 20Kgs	Count	14	16	30
		% within Willingness to Pay	18.9%	17.8%	18.3%
Total		Count	74	90	164
		% within Willingness to Pay	100.0%	100.0%	100.0%

Source: Primary field data

Table 4.11 shows that a total number of 74(45.1%) out of the sample of 164 respondents were not willing to pay for improved solid waste management services in Kitwe town council.

The highest number of respondents not willing to pay, 39(52.7%) were those that generated less than 10Kgs, while 21(28.4%) generated between 10 – 20Kgs, and 14(18.9%) generated over 20Kgs.

One of the eating houses managers had this to say "*when council authority fails to collect waste from my premises at least twice a week, i have no option other than employing private collectors who normally charge higher fee to dispose of accumulated waste*".

Table 4.11 further shows that a total of 90(54.9%) out of the sample of 164 respondents were willing to pay for improved solid waste management services in Kitwe town council.

The highest number of respondents willing to pay, 37(41.1%) tallied for both those that generated less than 10Kgs and those of 10 – 20Kgs, while 16(17.8%) generated over 20Kgs.

4.4.4.1 Hypothesis Testing

The researcher proceeded to statistically examine whether amount of waste generated by household has a relationship with willingness to pay for improved solid waste management services in Kitwe Town Council. The researcher was guided by the following hypothesis:

Hypothesis: Quantity of solid waste generated by the household heads significantly influences willingness to pay for improved solid waste management services in Kitwe Town Council.

The hypothesis was tested at a 95% level of significance (two-tailed) using Pearson Chi-square and Likelihood ratio, which measured the degree and direction of association between amount of waste generated by household and willingness to pay for improved solid waste management services in Kitwe Town Council. This means that the significance of computed values was tested using a p-value of 0.025. The results are presented in the table 4.12.

Table 4.12: Chi-square tests values of amount of waste generated by households Willingness to pay for improved waste management services

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.068[a]	2	.216
Likelihood Ratio	3.094	2	.213
Linear-by-Linear Association	.777	1	.378
N of Valid Cases	164		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.54.

Table 4.12 shows that there is no significant association between amount of waste generated by household and willingness to pay for improved solid waste management services, Pearson Chi-Square =3.068, df=2, sig>0.025(=0.216).

The likelihood ratio, further confirms the non-significant association between amount of waste generated by household and willingness to pay for improved solid waste management services, Likelihood Ratio = 3.094, df = 2, Sig>0.025(=0.213). The linear-by-Linear Association of 0.777, df = 1, Sig>0.025(=0.378) implies that there is no linear association between amount of waste generated by household and willingness to pay for improved solid waste management services in Kitwe town council.

4.4.5 To examine the extent to which maximum daily charges influence household heads' willingness to pay for improved solid waste management services in Kitwe Town Council

In order to examine the extent to which Maximum Pay Per Day influences household heads' willingness to pay for improved solid waste management services in Kitwe Town Council,

Respondents were asked to reveal the Maximum Pay Per Day by household and give their view about their willingness to pay for improved solid waste management services. The elicited responses were cross tabulated and the findings are shown in table 4.13.

Table 4. 13: Maximum pay per day by households and their Willingness to pay for improved sold waste management services in Kitwe town Council

Maximum Pay Per Day * Willingness to Pay Cross-tabulation			Willingness to Pay		
			No	Yes	Total
Maximum Pay Per Day	More than 400/=	Count	7	10	17
		% within Willingness to Pay	9.5%	11.1%	10.4%
	Maximum 300/=	Count	12	34	46
		% within Willingness to Pay	16.2%	37.8%	28.0%
	Maximum 200/=	Count	7	29	36
		% within Willingness to Pay	9.5%	32.2%	22.0%
	Maximum 100/=	Count	48	17	65
		% within Willingness to Pay	64.9%	18.9%	39.6%
Total		Count	74	90	164
		% within Willingness to Pay	100.0%	100.0%	100.0%

Source: Primary field data

Table 4.13 shows that a total number of 74(45.1%) out of the sample of 164 respondents were not willing to pay for improved solid waste management services in Kitwe town council.

The highest number of respondents not willing to pay, 48(64.9%) were those able to pay a maximum of 100/=, followed by those able to pay a maximum of 300/=, while those able to pay more than 400/= and a maximum of 200/= tallied at 7(9.5%). One of the primary school head teacher said, "*if waste generators were charged would have garbage ready for collection to avoid wasting council's time because failure to deliver waste on tractor on time would mean incurring extra cost to transport it oneself".*

Table 4.13 further shows that a total of 90(54.9%) out of the sample of 164 respondents, were willing to pay for improved solid waste management services in Kitwe town council. The highest number of respondents willing to pay, 34(37.3%) were those able to pay maximum of 300/=, followed by those able to pay a maximum of 200/=, 29(32.2%), then those able to pay a maximum of 100/=, 17(18.9%) and lastly those able to pay over 400/=, 10(11.1%). One eating house manager's had this to say, "*Council collects our solid waste only twice a week due to inadequate funding, so if we are charged affordable fee, collection of garbage would be on a daily basis which is good practice and makes our town look clean".* While another respondent said*, "paying user charges is not a big problem but who collects it is an issue to me only the payment goes to private refuse collector not council authorities."*

4.4.5.1 Hypothesis Testing

The researcher proceeded to statistically examine whether Maximum Pay per Day per household has an association with their willingness to pay for improved solid waste management services in Kitwe Town Council. The researcher was guided by the following hypothesis:

Hypothesis: Maximum daily charges paid by household heads significantly influences willingness to pay for improved solid waste management services in Kitwe Town Council.

The hypothesis was tested at a 95% level of significance (two-tailed) using Pearson Chi-square and Likelihood ratio, which measured the degree and direction of association between maximum pay per day per household and willingness to pay for improved solid waste management services in Kitwe town council. This means that the significance of computed values was tested using a p-value of 0.025. The results are presented in the table 4.14.

Table 4.14: Chi-squire tests Values for maximum pay day per household and willingness to pay for improved sold waste management services

Chi-Square Tests	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	38.082[a]	3	.000
Likelihood Ratio	39.776	3	.000
Linear-by-Linear Association	18.701	1	.000
N of Valid Cases	164		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.67.

Table 4.14 shows that there is a significant association between maximum pay per day per household and willingness to pay for improved solid waste management services, Pearson Chi-Square =38.082, df=3, sig<0.025(=0.000). The likelihood ratio, further confirms the significant association, Likelihood Ratio = 39.776, df = 3, Sig<0.025(=0.000). The linear-by-Linear Association of 18.701, df = 1, Sig<0.025(=0.000) implies that the relationship between maximum pay per day per household and willingness to pay for improved solid waste management services is linear in nature meaning the less the maximum pay per day per household the more willingness a person is to pay for improved solid waste management services in Kitwe town council.

In conclusion therefore the researcher accepted the hypothesis that was stated that: There is a significant association between maximum pay per day per household and willingness to pay for improved solid waste management services.

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents Summary of the findings, Discussion of study findings, Conclusions on study findings, Recommendations, Limitations of the study, Contributions of the study and Areas recommended for future research.

5.2 Summary of findings

The study assessed the factors that determine households' willingness to pay for improved solid waste management services. This was assessed by evaluating dimensions of income and education levels of respondents, quantity of solid waste generated, gender, and maximum daily charges.

5.2.1 Income Levels and Willingness to pay for improved Solid Waste Management Services.

Research question number one of this study was to find out how do income levels of household heads in KTC affect the WTP for Solid Waste Management services**.**

In the high income categories were more willing to pay for improved solid waste management services compared to their counterparts in the low income categories. The highest number of respondents not willing to pay, 59(79, 7%) were in the less 100,000/= income level.

The meaning is that the more the income level increases the more willingness a person is to pay for improved solid waste management services in Kitwe Town Council.

5.2.2 Education levels and Willingness to pay for improved Solid Waste Management Services

Research question number two was to find out relationship between education levels of household heads in KTC and their willingness to pay for improved solid services. The findings reveal that there was statistically significant relationship (sig<0.025(=0.018).) existed between education levels and willingness to pay for improved solid waste management services. The highest number of respondents not willing to pay i.e. 51.4% was of primary level of education, followed by illiterates, 24.3%.

5.2.3 Gender of household heads and their willingness to pay for improved solid waste management services

The third research question was to establish whether there is an association between sex of household heads and their willingness to pay for improved solid waste management services in Kitwe Town Council. The study revealed the highest number of respondents not willing to pay, 38(51.4%) were females, compared to 36(48.6%) males. The likelihood ratio, confirmed the non-significant association between sex and willingness to pay for improved solid waste management services (Likelihood Ratio = 2.869, df = 1, Sig>0.025(=0.090)).

5.2.4 Quantity of waste generated by household and their willingness to pay for improved solid waste management services

The fourth research question was to establish whether there is an association between amount of waste generated by households and their willingness to pay for improved solid waste management services in Kitwe Town Council. The highest number of respondents willing to pay, 37(41.1%) tallied for both those that generated less than 10Kgs and those of 10 – 20Kgs, while 16(17.8%) generated over 20Kgs.

There was no significant association between amount of waste generated by households and willingness to pay for improved solid waste management services (Pearson Chi-Square =3.068, df=2, sig>0.025(=0.216)).

5.2.5 Maximum Daily Charges and Willingness to pay for improved Solid Waste Management Services

The last research question was to assess the amount of daily charges households and other waste generators were willing to pay for improved solid waste management services. The highest number of respondents not willing to pay, 48(64.9%) were those able to pay maximum of 100/=, followed by those able to pay a maximum of 300/=, while those able to pay more than 400/= and a maximum of 200/= tallied at 7(9.5%). There was a significant association between maximum pay per day per household and willingness to pay for improved solid waste management services in Kitwe Town Council (Linear Association of18.701, df = 1, Sig<0.025(=0.000)).

5.3 Discussion of study findings

This section presents the discussion of findings according to the research questions.

5.3.1 Respondents' Income Levels and Willingness to pay for improved Solid Waste Management Services.

According to the results, respondents in the high income categories were more willing to pay for improved solid waste management services compared to their counterparts in the low income categories. This finding is in agreement with studies by Ojok et al., (2013); Banga & Razaak, 2011; Awunyo, (2013).

5.3.2 Respondents' Education levels and Willingness to pay for improved Solid Waste Management Services

The association between education levels and willingness to pay for improved solid waste management services is linear in nature meaning the more the education level increases the more willing a person is to pay for improved solid waste management services in Kitwe Town Council adds to literature by Awunyo, 2013; Niringiye & Omortor (2010) where they found out that the longer period the individual spent in the education the higher the likelihood the head of household was willing to pay for improved solid waste management services.

This probably attributed to their knowledge on the negative effects of poor solid waste management. This was revealed by the key informant who said that poor solid waste management leads to the following: "*spread of diseases like-dysentery, cholera ; typhoid; breeding of flies; bad odors; mosquito breeding; pollution of soil and water, contaminate environment; and block drainage channels".*

5.3.3 Respondents' Gender and Willingness to pay for improved Solid Waste Management Services

The results revealed an insignificant relationship between gender and willingness to pay for improved solid waste management services contrary to findings by Awunyo, (2013). According to their results, females were more willing to pay for improved solid waste management services since in most African societies like in Ghana are responsible for cleaning homes.

5.3.4 Quantity of Solid Waste Generated and Willingness to pay for improved Solid Waste Management Services

In this study the quantity of solid waste generated did not significantly affect willingness to pay for improved solid waste management.

This was not consistent with the results from studies Awunyo (2013) where volume of waste generated had a positive and considerable relationship willingness to pay for improved solid waste management services. According to their results, those who generated larger volume of waste had more problems with disposal thus were WTP for improved solid waste management services.

5.3.5 Maximum Daily Charges Per day and Willingness to pay for improved Solid Waste Management Services

The results in the study revealed a significant relationship between respondent's willingness to pay and maximum daily charges where respondents were willing to pay between UGX 100- 300 Linear Association of 18.701, df = 1, Sig<0.025(=0.000)).This is in agreement with the findings by Ojok et al., 2013; Ekere, et al., (2010) where households were willing to pay on average per month was UGX 100 (USD.0.054) and the maximum at UGX.70,000 (USD.37.04) and UGX.1,165 ($0.58) per week for solid waste management respectively.

5.4 Conclusions on study findings

5.4.1 Income levels and willingness to pay for improved Solid waste management Services

Grounded on the findings of the study, it can be concluded that income levels of household heads had impact on willingness to pay for improved Solid Waste Management Services.

Therefore the following hypothesis was supported. Household heads in high income levels are more willing to pay for improved solid waste management services than ones with meagre income levels.

5.4.2 Education levels and Willingness to pay for improved Solid Waste Management Services

It can be concluded that**,** the longer period the individual spent in the education system the higher the likelihood the head of household was willing to pay for improved solid waste management services.

Therefore the hypothesis that those with higher education levels are more willing to pay for improved solid waste management services is upheld. This probably is attributed to their knowledge on the negative effects of poor solid waste management.

5.4.3 Gender and Willingness to pay for improved Solid Waste Management Services.

It can be concluded that there was no significant relationship between sex and willingness to pay for improved solid waste management services. The hypothesis that female headed households are more willing to pay for improved solid waste management services was not supported by the study findings.

5.4.4 Quantity of Solid Waste Generated and Willingness to pay for improved Solid Waste Management Services

The study found out that the quantity of solid waste generated did not significantly affect willingness to pay for improved solid waste management services.

This finding did not support hypothesis that households which generate big volumes of solid waste are more willing to pay for improved solid waste management services.

5.4.5 Maximum Daily Charges Per day and Willingness to pay for improved Solid Waste Management Services

The study revealed a significant relationship between respondent's willingness to pay and maximum daily charges for improved solid waste management services.

The study findings do support the hypothesis that higher daily charges reduced the willingness of respondents to pay for improved solid waste management services.

5.5 Recommendations

With findings of study, the researcher recommends a number of recommendations in line with the research questions.

5.5.1 Respondents' Income Levels and Willingness to pay for improved Solid Waste Management Services.

Kitwe Town Council Lower Local Government should start behaviour change of mind set campaign awareness of not willing to pay for SWM due to misconception of being poor and perceiving SWMS as a responsibility of government. Also back yard agriculture using organic waste generated at household level should be promoted to ensure food security and cutting high expenditures of food that over stretches people's low incomes.

5.5.2 Respondents' Education level and Willingness to pay for improved Solid Waste Management Services

Kitwe Town Council Lower Local Government should formulate a byelaw to curb high rate of drop out at primary level that denied many citizens attaining tertiary level.

Further functional adult literacy should be enhanced and strengthened in order to impact knowledge in relation to implications of poor SWM and the associated environmental problems for residents to appreciate need to pay solid waste management user charges.

5.5.3 Respondents' gender and Willingness to pay for improved Solid Waste Management Services

Kitwe Town Council Lower Local Government should emphasise gender mainstreaming in SWMS provided so as to equally involve women and men, boys and girls in SW handling so as to create a sense of burden of SWM that is curtailed by financial constraint of authority.

5.5.4 Quantity of Solid Waste Generated and Willingness to pay for improved Solid Waste Management Services

Kitwe Town Council Lower Local Government should create awareness on effects of poor SWM on peoples' health and environment.

Those generating big volumes of waste should be heavily taxed based on polluter principle if minimization of waste generation at point of generation is to be achieved. The researcher recommends that collection, disposal and recycling of discarded solid waste be done in a manner that is safe, efficient, environmentally sound and cost-effective.

5.5.5 Maximum Daily Charges Per day and Willingness to pay for improved Solid Waste Management Services

Kitwe Town Council Lower Local Government should strengthen enforcement mechanism in collection of daily user charges through having in place a byelaw spelling out maximum daily charges per day for SW generators to effectively recover all costs associated with provision of improved SWMS.

5.6 Limitations of the study

This being a case study design, the researcher was limited to Kitwe Town Council in Ntungamo district. Thus results cannot be applied to other urban councils within and outside Ntungamo district.

The geographical scope was another limitation to the researcher that focused on Kitwe Town Council other than covering the other three urban councils in Ntungamo district to have got more valuable information.

The study was limited by the sample size due to limited time and financial resources available to the researcher.

Inevitable personal problems of having my home torched by mob, cattle/goats looted and wrongfully detained while undergoing training without doubt the researcher was delayed to accomplish the dissertation in time.

5.7 Contributions of the study

The findings of this study can be baseline data to use in guiding the policy makers of Kitwe Town Council determining daily charges to be paid by solid waste generators in order to meet the cost recovery in solid waste management.

Basing on the findings of this study it was found out that there is a very high possibility of households willing to pay user fees directly to private waste collector in order to bridge the gap of financial constraint to KTC in achieving 100% collection and final disposal of SW.

This research further enriches existing literature by adding to body of knowledge on the subject of solid waste management.

5.8 Areas recommended for future research

A similar study is recommended to be carried out in Kitwe Town Council considering a wider period of existence not less than ten years to see whether results would be the same. The researcher recommends further study of dimensions that this study failed to bring out determining WTP for improved SWMS other dimensions like level of environmental concern, household size, type of housing, marital status and location of household that could be affecting WTP for SWMS could be studied.

Also a similar study should be done using other study designs to find out whether the same results will be generated. The study recommended that Kitwe Town Council authorities should promote behavior change of mind set on perception of being poor to afford user charges and back yard agriculture using manure from solid waste in order to ensure minimization of solid waste generated by urban households.

The researcher continues to recommend further studies conducted on WTP for improved SWMS in sister Town Councils of Rwashamaire and Rubare in Ntungamo district respectively in order to evaluate the possibility household's willingness to pay user fees for SWMS.

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APPENDIXES

Appendix 1: Required Sample Sise

Required Sample Size†

Population Size	Confidence = 95% Margin of Error				Confidence = 99% Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1,000	278	440	606	906	399	575	727	943
1,200	291	474	674	1067	427	636	827	1119
1,500	306	515	759	1297	460	712	959	1376
2,000	322	563	869	1655	498	808	1141	1785
2,500	333	597	952	1984	524	879	1288	2173
3,500	346	641	1068	2565	558	977	1510	2890
5,000	357	678	1176	3288	586	1066	1734	3842
7,500	365	710	1275	4211	610	1147	1960	5165
10,000	370	727	1332	4899	622	1193	2098	6239
25,000	378	760	1448	6939	646	1285	2399	9972
50,000	381	772	1491	8056	655	1318	2520	12455
75,000	382	776	1506	8514	658	1330	2563	13583
100,000	383	778	1513	8762	659	1336	2585	14227
250,000	384	782	1527	9248	662	1347	2626	15555
500,000	384	783	1532	9423	663	1350	2640	16055
1,000,000	384	783	1534	9512	663	1352	2647	16317
2,500,000	384	784	1536	9567	663	1353	2651	16478
10,000,000	384	784	1536	9594	663	1354	2653	16560
100,000,000	384	784	1537	9603	663	1354	2654	16584
300,000,000	384	784	1537	9603	663	1354	2654	16586

Appendix 2: Questionnaire

This study is being undertaken by Tumushabe Atwine Matthew, a student of Uganda Management Institute and the school of Management Sciences as partial fulfilment for the award of Master's Degree in Management Studies (Public Administration and Management). This questionnaire is designed to obtain information on the current situation of solid waste and households' willingness to pay for an improved solid waste management in Kitwe Town Council. The information collected will be confidential and for academic purpose only. Thus you are requested to participate in this study truthfully as you can.

Name of the interviewer:

Date of interview :

Coded questionnaire no:

Section A: Back ground information.

1. Ward: (i) Central (ii) Omukibare

2. Age of the Respondent (i) 15-20 years (ii) 21-35 years (iii) 36-45years (iv)Over 45- years

3. Housing arrangement of the respondent

(i) Owned (ii) Rented (iii) Free (iv) Staying with a friend / relative

Section B: Factors influencing willingness to pay for solid waste management services

Independent Variable I: Income

1. My monthly income from all my sources of income is in the range:

(i) Less than 100,000/= (ii) 100,000 – Less 300,000/= (iii) 300,000 – Less than 600,000/= (iv) 600,000 – Less than 1,000,000/= (v) 1,000,000/= and above

Independent Variable II: Education

1. My highest level of education is (i) Illiterate (ii) Primary (iii) Secondary (iv) Tertiary

Independent Variable III: Gender

1. My gender is (i) Male (ii) Female

Independent Variable IV: Quantity of Solid Waste

1. I generate the following volume of solid waste per week

   (i) Less than 10Kgs (ii) 10 – Less than 20Kgs (iii) Over 20Kgs

Independent Variable V: Maximum Daily Charge for Waste Disposal

1. My household can afford to pay the following amount of money per day for improved solid waste management services:

   (i) 500/= (ii) 400/= (iii) 300/= (iv) 200/= (v) 100/= (v) 0/=

Section c: Dependent Variable - Willingness to pay for waste management services

1. I am willing to pay for improved solid waste management services (i) Yes (ii) No

Section D: Intervening Variable I - Waste Generation

For each of the statements below indicate the extent to which you agree or disagree with particular statement. Please tick appropriate box using the Likert scale below.

Strongly Agree (SA)	Agree (A)	Not sure (NS)	Disagree (D)	Strongly Disagree (SD)
5	4	3	2	1

No	Statements measuring waste generation	SA	A	NS	D	SD
1	We produce most solid waste at house hold level than any other source					
2	My generated solid waste is kept in sanitary dust bin					
3	I do usually store generated solid waste in plastic sacks/ bags					
4	I do always sort and separate biodegradable and non-biodegradable solid waste and store it separately					
5	I do minimize generated solid waste at household / institution level					
6	My generated solid waste is comprised of either food waste, or paper, or compound and hedge cut tings, or plastics, or glass, or metals, or wood					

Section E: Intervening Variable II - Waste Handling

No	Statements measuring waste handling	SA	A	NS	D	SD
1	My generated solid waste is usually collected by council's tractor from my door steps / nearby neighbourhood					
2	I employ most of the times a private collector collect the generated solid waste					
3	My generated solid waste is collected twice a week					
4	I take my generated and stored solid waste to a gazetted dumping site					
5	My generated solid waste is collected by a private person/company					
6	My collected solid waste should be treated at a gazetted sanitary land fill					
7	We have a qualified staff to handle treatment of solid waste					
8	We have equipment and machinery to treat solid waste					
9	My generated solid waste is usually disposed of at sanitary land fill					
10	Women and children do usually handle the generated solid waste					
11	I 'm concerned with poor solid waste handling approaches					
12	I'm in support of the 3 Rs (reduce, recycle, reuse) strategy in achieving effective solid waste handling					

Section: Intervening Variable III - Waste Generators

No	Statements measuring waste generator	SA	A	NS	D	SD
1	Households are sources of generated solid waste in my village					
2	Markets are sources of generated solid waste in my village					
3	Commercials are sources of generated solid waste in my village					
4	Agricultural products are sources of generated solid waste in my village					
5	Slaughter houses are sources of generated solid waste in my village					
6	Health facilities are sources of generated solid waste in my village					
7	Jua-kali-industries are sources of generated solid waste in my village					

Appendix 3: Interview Guide

A**:** School head teachers / Restaurants managers

1. Who are the stakeholders in implementation of management of generated solid waste in Kitwe Town Council?
2. What are the legal tools in place to ensure effective SW management by council authorities?
3. Do the policies and laws recognize the need for solid waste generators to contribute?
4. How much should solid waste generators pay per day for improved solid waste management services?
5. Who should collect the daily user charges for improved solid waste management services?
6. What would you do to improve solid waste management in Kitwe Town Council?
7. Mention types of solid wastes you generate
8. How much solid waste do you generate on a weekly basis in terms of bags/ kilograms?
9. Where do you store the generated SW before it's collected?
10. Who usually collects your solid waste from your institution/ restaurant/
11. How often is your SW collected by the Council authority?
12. Where does the Kitwe Town Council Authority get solid waste management money from?
13. Mention types of SW disposal you are aware of.
14. Who meets the Cost of collection of SW from your institution/ restaurant/ house?
15. Are you satisfied with the solid waste management services? If not what do you propose for Improved SM services in Kitwe Town Council?
16. Mention effects of poor SWM on people's health and environment.

Appendix 4: Documentary Review Guide

Titles of documents	**Subject/particulars of themes/topics**	**Data/Remarks**
Book of Community Based Information Management System (CBMIS)	Community Based collected data.	Obtain study population items
The Uganda Urban Policy Draft,(2012)	Policy on SWM.	Extracting data on SWM.
Kitwe Town Council Minutes- FY 2011/2012 and FY 2012/2013	Resolutions in council minutes	Obtain data of issue of SWM.
Kitwe Town Council Budgets- FY 2011/2012 and FY 2012/2013	Budget allocations to council departments	Obtain data on expenditure on SWM & quantity of SW handled by council
KTC General Purpose Committee's Reports FY 2011/2012, FY 2012/2013.	Budget speeches/ budget performance	Obtain data on expenditure on SWM & quantity of SW handled by council
Kitwe Town Council Development Plan FY 2011/2012- 2015/16	Budget allocations to council departments	Obtain council's vision & priority service area

Appendix 5: Field Research

UGANDA MANAGEMENT INSTITUTE

Telephones: 256-41-4259722 /4223748 /4346620
256-31-2265138 /39 /40
256-75-2259722
Telefax: 256-41-4259581 /314
E-mail: admin@umi.ac.ug

Plot 44-52, Jinja Road
P.O. Box 20131
Kampala, Uganda
Website: http://www.umi.ac.ug

Your Ref:

Our Ref: G/35

26 February 2014

Mr. Mathew Atwine Tumushabe
12/MMSPAM/28/109

Dear Mr. Tumushabe,

FIELD RESEARCH

Following a successful defense of your proposal before a panel of Masters Defense Committee and the inclusion of suggested comments, I wish to recommend you to proceed for fieldwork.

Please note that the previous chapters 1, 2 and 3 will need to be continuously improved and updated as you progress in your research work.

Wishing you the best in the field.

Yours sincerely,

Stella Kyohairwe (PhD)
AG.HEAD, POLITICAL AND ADMINISTRATIVE SCIENCE

Appendix 6: To Whom It May Concern

UGANDA MANAGEMENT INSTITUTE

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Kampala, Uganda
Website: http://www.umi.ac.ug

Your Ref:

Our Ref: G/35

26 February 2014

TO WHOM IT MAY CONCERN

MASTERS IN MANAGEMENT STUDIES DEGREE RESEARCH

Mr. Mathew Atwine Tumushabe is a student of the Masters in Management Studies of Uganda Management Institute 28th Intake 2012/2013 specializing in Public Administration and Management, **Reg. Number 12/MMSPAM/28/109**.

The purpose of this letter is to formally request you to allow this participant to access any information in your custody/organization, which is relevant to his research.

His research Topic is: **"Urban Household's Willingness to Pay for Improved Solid Waste Management Services in Kitwe Town Council, Ntungamo District"**

Stella Kyohairwe (PhD)
AG.HEAD, POLITICAL AND ADMINISTRATIVE SCIENCE