

**The efficacy of prepaid water meters for
potable water service provision in the Harare
City Council, Zimbabwe**

TC Maramura



orcid.org 0000-0002-4419-1887

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Promoter: Prof C Hofisi

Graduation ceremony: July 2018

Student number: 28042387

DECLARATION

I **Tafadzwa Clementine Maramura** declare that: **The efficacy of prepaid water meters for potable water provision in the Harare City Council, Zimbabwe** is my own independent work, that all the sources quoted have been indicated and acknowledged by means of complete reference, and that I have not previously submitted this dissertation for a degree at any university.

Signature

Date

DEDICATION

This work is dedicated to my loving mother Mrs Beatrice Nyamweda-Maramura and in loving memory of my father (Gen.) Charles Maramura, since 1989, this is for you.

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- Psalm 121:1-2 *“I will lift my eyes unto the hills, from whence cometh my help? My help cometh from the LORD, which made heaven and earth”*. I thank the Lord God Almighty for the provision and abundance, during the course of this academic terrain.
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ABSTRACT

The 21st century has witnessed the downfall and failure to expand the potable water infrastructural system by the public service in developing nations. Budgetary limitations have also been pressuring the public sector in developing nations to initiate other revenue accrual tools of service provision such as prepaid water meters to ensure sustainable cash-flow within the public service as a system. It is however unlikely that some of these prepaid water meters have not been solid solutions to the underlying challenges within the public service. The reason is that prepaid water meters fundamentally require a certain level of technical and financial capacity which the public sector in most developing nations is still struggling with. The implementation of prepaid water meters has also been contentious in Harare with residents citing that the meters are an impartial technology which is simply meant to benefit the service provider, whilst alienating the low-income households.

The study utilised the pragmatic research philosophy by means of connecting both qualitative and quantitative ontological and epistemological interpretations to address the research questions by using key-informant interviews, focus group discussions and questionnaires. The study also used a document study to discuss prepaid water meter implementation in nine developing and developed nations in comprehending the efficacy of prepaid water meters for potable water provision in Harare. Resultantly, the study exposes that the prepaid water metering system is very commendable; however, its efficacy in implementation is still elusive in the Harare City Council. The study further concludes that prepaid water meters surely have the potential to efficiently deliver potable water, but they are certainly not a miracle panacea for the challenges underpinning the Harare City Council. Based on this exposition, the study ultimately proposes a framework for potable water provision and proffers recommendations and policy implications of prepaid water meters.

Keywords: Harare City Council, Potable Water, Prepaid Water Meters, Public Service Provision, Water provision

ACRONYMS AND ABBREVIATIONS

BOM	Board of Management
CBD	Central Business District
CHRA	Combined Harare Residents Association
DBSA	Development Bank of Southern Africa
GOB	Government of Botswana
HCC	Harare City Council
HRBA	Human Rights-Based Approach
HRT	Harare Residents Trust
JMP	Joint Monitoring Program
ICESCR	International Covenant on Economic, Social, and Cultural Rights
MDG	Millennium Development Goals
PHG	Palestine Hydrology Group
PPWM	Prepaid Water Meters
SDC	Service Delivery Charter
SPSS	Statistical Package for Social Sciences
SDG'S	Sustainable Development Goals
WHO	World Health Organization
ZIMASSET	Zimbabwe Agenda for Sustainable Socio-Economic Transformation
ZESA	Zimbabwe Electricity Supply Authority

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CHAPTER ONE

INTRODUCTION AND GENERAL ORIENTATION OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND

Potable water and energy service providers in and out of Africa have been recommending, testing and implementing prepaid meters on public services, hence prepaid water meters are an old form of technology (Musingafi & Chadamoyo, 2013; Chatiza, 2016). Von Schnitzler (2013) OFWAT (1998); BMA (1994) confirm that prepaid water meters were implemented in England in the late nineteenth century. However, what is clear from these studies is that prepaid meters during that era were only meant to coerce low-income households into the habits of paying for services and this would recover revenue to maintain and extend the infrastructural network of the public sector (Von Schnitzler, 2013). Furthermore, despite these objectives not being achieved through prepaid meter installation back then, countries like Uganda, India, Palestine, Zambia, Malawi, Namibia and South Africa have ultimately proceeded with prepaid water meter implementation in recent years (Matabvu, 2016; Berg & Mugisha, 2010; Bakker, 2007; Drakeford, 1998). Zimbabwe has also followed the trend of prepaid water meters and this has created animosity between the Harare City Council and the citizens who are in contradiction to prepaid water meter implementation citing them to be anti-poor, considering the present-day socio-economic crisis of Zimbabwe as a failed state (Gambe, 2013; Chirenda et al., 2015).

Prepaid water meter implementation has been contended by human rights activists to be against section 77a of the Constitution of Zimbabwe (2013) which provides that “every person has a right to safe, clean and potable water” (Mudzingwa, 2016; Chatiza, 2016). Prepaid water meters are being resisted in Harare because working towards the realization of the human right to water will be a challenge for Harare City council since it entails balancing logistical and economic values, amidst the economic hardships that Zimbabwe has been succumbing to (Gambe, 2013, Chaminuka and Nyatsanza, 2013). Against this background, the Harare City Council is forging through with the installation, despite resistance from residents who have

the support of civil society organizations. The contestations of the citizens are resonating in the privatization of potable water which will resultantly further widen the existing gap between the poor and rich (Thematic Report, 2014; Gambe, 2013). Goal six of the Sustainable Development Goals (SDG's) of the Post-2015 Agenda posits that "developing and developed countries should ensure the availability and sustainable management of water and sanitation for all by 2030" (WHO, 2015; JMP, 2017). Goal six of the SDG's further emphasizes that all developing nations must achieve universal and equitable access to safe and affordable drinking water for all by 2030. This is a reflection on the significance of potable water in the everyday lives of humans. In retrospect, the government of Zimbabwe should endeavor to meet the targets of goal six of the SDG's as a country that failed to meet the target of the Millennium Development Goal seven of 2015 (UNICEF, 2016; JMP, 2017).

Zimbabwe registered a 100% coverage growth in potable water supply and sanitation services during the period 1980-2000 for urban areas and it was recognized as a world leader in urban water supply services among developing countries (Musingafi & Chadamoyo, 2013 Nhapi (2009); Chiri (2004); Chirisa (2013). The Harare City Council is presently underpinned by constant financial challenges which are resulting from institutional inability in the operation and management of the potable water infrastructure (Mudzingwa, 2015; Chatiza, 2016). The contestation lies in how the City Council plans to govern a complex, technical and exorbitant prepaid water metering system if it is failing to sustain and maintain the existing, simpler and cheaper conventional meters. The purpose of the research is to determine the efficacy of prepaid water meters for potable water service provision in Zimbabwe in recommending a sustainable source of potable water provision from a multi-stakeholder lens. This is because Chapter 4, Section 77a of the (Constitution of Zimbabwe, 2013) asserts that water is central to human life and dignity; while section 77b notes that every individual has the "right to safe, clean and potable water". Resultantly, this study argues that the implementation of prepaid water meters is in direct contradiction with the Constitution since failure to prepay for potable water would lead to the human right to water being nullified. Hence it is fundamental to determine how prepaid water meters will address the potable water service provision contests underpinning the Harare City Council without nullifying the citizens' human rights to potable water.

Murungweni (2013) affirms that the government of Zimbabwe implemented the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZIMASSET) a plan which was conceived to recover the country's collapsing socio-economic status. The ZIMASSET makes an intrepid affirmation that it will be a citizen-centered government that upholds the promotion of equitable development and prosperity (Constitution of Zimbabwe, 2013; ZIMASSET, 2013). Subsequently, the Social Services Cluster of the ZIMASSET pledges to undertake programmes to expand access to potable water (ZIMASSET, 2013). However, not long after this declaration was made the government of Zimbabwe introduced the prepaid water meters, without adequate consultation of the citizens. The International Water Association (2004); OXFAM (2011); WB (2015), however, support consultation of the public by denoting that, "access to good, safe and reliable drinking water is one of the most basic needs of human societies and as such it requires an integrated approach, close cooperation, and partnership between all stakeholders". Thus Moriarty et al., (2010); Schouten et al., (2011) confirm that warranting proper consultation with the citizens is essential when implementing public service provision tools due to their causal effect on the public.

The aim of this study was to explore the operational dynamics of prepaid water meters by highlighting the perceptions of both the residents and the Harare City Council towards the efficacy of prepaid water meters. Specifically, the study highlighted the efficacy of prepaid water meters in an attempt to recommend a sustainable potable water provision tool. This implies that the provision of clean and accessible potable water is essential to every government because it is a central element of human life. Chapter 4, Section 77a of the (Constitution of Zimbabwe, 2013) asserts that water is central to human life and dignity; while section 77b notes that every individual has the "right to safe, clean and potable water". The government of Zimbabwe is currently underway with the implementation of prepaid water meters and this research is meant to comprehend how the meters will ensure effective and efficient water provision without compromising the rights of the citizens to potable water.

1.2 PROBLEM STATEMENT

Abu-Hilou and Jarrar (2012); (Von Schnitzler, 2013); Chatiza (2016) emphasize that prepaid water metering remains contentious for developing nations since proponents argue it to be a doable revenue generation strategy, while detractors dispute them over technical irregularities, high maintenance costs, and an anti-poor system. Zimbabwe presently lacks the ability to mobilize adequate revenue to finance the resuscitation of the current cheap and dilapidating conventional meters (Musingafi & Chadamoyo, 2013; Matabvu, 2016). This has affected the Harare City Council which is fronted by endless technical and financial challenges which are reflecting on the institutional incapacity of the city council's control of the conventional meters (Mudzingwa, 2015; CHRA, 2015). This study argues that how then does the City Council plan on sustaining complex, more technical and costly prepaid water meters without negating the human right to water if it is failing to maintain the existing less complex, less technical and cheaper conventional meters.

Literature espouses that most countries have been inept in proactively maintaining prepaid water meters whilst just a few have succeeded to sustain them in mitigating possible risks such as death when prompted by the absence of potable water (Von Schnitzler, 2013; Matabvu, 2016; Berg & Mugisha, 2010; Bakker, 2007). Hence, Mudzingwa (2015) notes that in light of prepaid water implementation there are other appropriate alternative strategies, which the Harare City Council can employ in the sustainable provision of potable water. Prepaid water meters (PPWM's) have been presented and implemented in both developed and developing economies, however, there still remains incomplete systematic research that has been done through a multi-stakeholder lens to determine their efficacy for potable water provision. Conversely, the Harare City Council confirmed that this study is a first at the Doctoral level and as a result, it incorporated citizenry views, Harare City Council and the civil water organizations in comprehending the efficacy of prepaid water meters in Harare for potable water provision.

1.3 RESEARCH QUESTIONS

The research questions of this research are as follows:

- What is the fundamental link between Human Rights-Based Approach (HRBA) and systems theory to service delivery in the implementation of prepaid water meters?
- What are the perceptions of the Harare residents regarding the effectiveness of the prepaid water meters for service provision?
- Does the Harare City Council have the technical capacity to provide potable water to the residents through prepaid water meters?
- What changes do the prepaid water meters present for the residents and the Harare City Council in the context of the legislative frameworks of water service provision in Zimbabwe?
- What are the appropriate alternative strategies for potable water provision in Zimbabwe?

1.3.1 Hypotheses

The hypotheses that guided this study are highlighted below:

- There is a link that exists between the HRBA and Systems theory to service delivery in the implementation of prepaid water meters as a complex variable.
- Residents have negative perceptions towards the effectiveness of prepaid water meters for potable water service provision.
- Harare City Council does not have the technical capacity to effectively administer the prepaid water meters without nullifying the human right to water.

1.4 RESEARCH OBJECTIVES

The aim of the study was to explore on the efficacy of prepaid water meters by identifying the perceptions of the Harare residents and investigating the technical capacity of the Harare City Council in an attempt to recommend alternative strategies for potable water provision.

The research objectives of this research are highlighted below:

- To establish the fundamental link between HRBA and systems theory to service delivery in the implementation of prepaid water meters.
- To identify the perceptions of the Harare residents regarding the effectiveness of prepaid water meters for service provision.
- To investigate the technical capacity of the Harare City Council authorities in providing potable water to the residents through prepaid water meters.
- To understand the changes that prepaid water meters present for the residents and the Harare City Council in the context of the legislative frameworks of water service provision in Zimbabwe.
- To explore and recommend the appropriate alternative strategies for potable water provision in Zimbabwe.

1.5 METHODOLOGY

Brynard and Hanekom (1997) acknowledge that research methodology compels a reflection on the preparation, organizing, and implementation of the research in order to comply with the demands of truth and objectivity. Hence there are two main approaches to data collection which are quantitative and qualitative. Their selection is mainly dependent on the merits and demerits of each research method and how the researcher plans on conducting the research. Research methodology is, therefore, the manner in which the researcher chooses to gather data for the research project. Hence, Okubena (2012) refers to the research methodology as the manual leading the gathering, dimension, and inquiry of data in order to accomplish the intentions of a research project. This simply implies that the essence of a research methodology is to give emphasis on the route of the research and how the researcher plans to accomplish that route. This explains why the methodology which

the researcher selected had a strong causal effect on the research findings and conclusions.

1.6 RESEARCH APPROACH

Leedy and Ormrod (2001) confirm that a research design is a comprehensive plan for undertaking the key research problem. This is because it enables the overall creation of the research procedures in the collection and analysis of data. Research design can also be noted as a structure of investigation that is regarded to obtain answers to research questions (Cooper & Schindler, 2006). Rosnow and Rosenthal (2008:74) affirm that qualitative research elicits an account of meaning, experience, and perceptions. Kumar (2005:73) defines quantitative research as an investigation of a phenomenon by testing a theory that can be measured numerically and analyzed statistically. This research used the mixed method approach incorporating both qualitative and quantitative research instruments. The approach of triangulation helped the researcher to answer the research questions from diverse angles. Leedy (2005) also argues that triangulation helps the researcher to make an objective assessment of data. When a researcher employs various data collection instruments, the research design employed helps to bring out holistic results mainly because the consistency of variations can be picked from the varying data analyses (Creswell, 2003). There are various types of research designs and these include descriptive, correlational, semi-experimental and experimental. This research thus adopted two research approaches to ensure that they complement the weaknesses of the other hence in providing a better understanding of the research problem than either research approach alone (Creswell, 2003). A research design is used to structure the research, to show how all of the major parts of the research project, the sampling techniques, data collection methods as well as the data analysis work together to try to address the central research questions.

1.6.1 Qualitative Research

Qualitative research is concerned with the understanding rather than an explanation of a phenomenon as well as a naturalistic observation as opposed to controlling quantities. Lewis et al., (2005:38) argue that qualitative research entails information collected in a non-numerical procedure, basing on the knowledge, emotional state,

principles, and behaviors of the target population. This research also employed the qualitative research approach since there are some research questions that could not be quantified, but could be conveyed in words to describe the phenomenon.

1.6.2 Quantitative Research

Quantitative research approaches involve the use of numbers instead of words to explain phenomena in research. A quantitative research approach typically takes a deductive approach, which begins with a hypothesis and then testing the hypothesis on the target population to deduce variations for the research (Rosnow & Rosenthal, 2008:72). Hence, quantitative research approaches are generally known as deductive analysis. Swart and Pettipher (2005) also note that this simply implies that the research question or hypothesis is framed and formulated prior to the actual study. Furthermore, Creswell (2003) affirms that quantitative research begins with an abstract which systematically follows a concrete base which derives a set of increasingly more concrete propositions which culminates in a single or more testable hypothesis.

1.6.3 Validation of the Mixed Method Approach

Mixed-method research is steadily gaining momentum because researchers have been keener to concede the distinct strengths and confines of both qualitative and quantitative research approach. The aim of triangulating research approaches is to enable the execution of aligning the unique strengths of each approach in providing a comprehensive understanding. A common mixed method design is to assimilate the outcomes of the large-scale data set analyses. A mixed-method approach essentially integrates the strengths of each approach through each step of the research, from data collection to data analysis. Okubena (2012) asserts that it is essential to reflect on the purpose of the research and the merits and demerits of the research when deciding on the type of mixed method approach to incorporate. The research employed the mixed method approach so as to advance the scope of understanding the study by counteracting the demerits of either approach. A significant characteristic of employing the mixed method approach, is its provision of data triangulation in the undertaking of a research study. This simply implies that mixed method research permitted the researcher to recognize the factors of a research problem by dissecting it using diverse entry points. It is against this

background that, Okubena (2012) sustains that the mixed method research is most appropriate:

- When the researcher wants to validate research results that have been obtained through other research approaches.
- When the researcher is undertaking a relatively new study area and it becomes essential to have a background of the variables to study through qualitative research and then undertake a larger sample with quantitative research.
- When the researcher intends to dissect the research questions from diverse angles in an attempt to consolidate the findings.
- When the researcher seeks to understand inquiry by elaborating it based on findings from other findings.
- When a researcher wants to develop a theory on a phenomenon in a bid to test it since a qualitative research approach is more suitable to build theory, while a quantitative research approach provides a platform to test theories.

1.7 RESEARCH POPULATION

A population is a collection of all the elements under study and it is inclusive of the total set of units under research (Leedy, 2005). The basic units of analysis for this research were inclusive of 271 Harare household residents, 10 key Harare city council authorities and 20 officials from civil water organizations. Harare Province has an average total population of 2 123 132 people out of the 13 061 239 of the population of Zimbabwe (Demographia World Urban, 2016). This analysis was based on the population as enumerated with reference to the last census conducted in Zimbabwe in August 2012. The research was not able to cover the entire population of Harare hence an estimated representative sample of 271 Harare household residents was used. The estimated representative sample size for the survey was derived from the Raosoft sample size calculator for the maximum variability of the sample based on the population of Harare (Raosoft, 2004). The decision to draw the case study from the Harare City Council was advised by the fact that it is the pioneer in the implementation of prepaid water meters in Zimbabwe.

Mpofu (2011) confirms that case studies are appropriate for individual researchers because it permits them to study a phenomenon in depth on a particular specific timeline.

1.7.1 Pilot Study

Initially, a pilot study of 20 households was undertaken prior to the actual data collection phase and the results were used to merge, refine and finalize the data collection tools. The results of the survey, interviews and focus group discussions were gathered and ultimately analyzed over a continuous six-month period. The questions from the data collection instruments included information from the demographic household to specific questions on PPWM's, consumption patterns, alternative measures, perceptions of the residents on PPWM's and effects they have on households.

1.7.2 Study sample

Okubena (2012:114) defines sampling as a process of selecting units from a population of interest. Systematic sampling informed the research on the selection of the Harare residents because it entails the adoption of simple random sampling at the beginning in order to establish a sampling interval that will then create a quasi-random selection method. Okubena (2012) further affirms that systematic sampling enables an equal selection opportunity for every individual respondent in the population, through a sampling interval which informs the researcher on how to select the individuals to be respondents. The researcher identified the first respondent from the Harare City Council registry and the remaining households were selected using the sampling interval of the 5th element of the entire population from the Harare City Council registry on households that have prepaid water meters. The researcher used purposive sampling to select the key informants from the Harare city council authorities since they are in charge of the prepaid water metering implementation. The researcher selected these key informants based on their proficiency and experience as the service providers who are executing the prepaid water meters. Purposive sampling was employed to select the participants from two civil water organizations because they are the catalysts between the Harare residents and the Harare city council authorities. The basis for using purposive sampling was to allow the researcher to select the respondents who had better

knowledge of the efficacy of prepaid water meters and its essence on the human right to water for potable water provision.

Table 1 Designation of respondents

DESIGNATION OF RESPONDENTS	TARGETED RESPONDENTS	INSTRUMENT	ANALYSIS
Harare City Council authorities	10	Key Informant Interviews	Thematic Coding
Civil water organizations officials	20	Focus Group Discussions	Content
Harare residents	271	Questionnaires	SPSS
Total Target Population	301		

Source: Own Illustration (2017)

1.8 DATA COLLECTION

The selection of a data collection method precisely depends on the choice of the research method, the research topic and the availability of data (Kumar, 2005:73). There is a wide range of data collection methods used in conducting research in obtaining data. Dirwai and Gwimbi (2003) identify instruments that can be used to gather data and among these include, interviews, intake forms, questionnaires, and documents. This study employed both probability and non-probability sampling methods to obtain the data that was used during the data analysis phase of this study. This research was heavily reliant on primary data which was gathered from the Harare residents, Harare City Council and Harare resident's associations. This research used key informant interviews, focus group discussions, questionnaires and secondary data. Ultimately, descriptive statistics, ranking, and numerous charts were then employed to ensure the realization of the research aims and objectives from the quantitative data.

1.8.1 Questionnaires

Leedy (2005) views a questionnaire as a common place for observing data beyond the physical reach of the observer through carefully laid down questions. Remler and Van Ryzin (2011:523) note that a good questionnaire must be simple and have easily understood questions such that individuals can interpret and make meaning

out of them. Questionnaires with mostly close-ended and open-ended questions were self-administered to identify the views of the Harare residents regarding the effectiveness of the metering system on service delivery. The researcher also used a questionnaire because it is most appropriate when establishing a relationship between variables when there is a large sample involved, within a limited time-frame. The questionnaire also enabled the provision of a measurement of the views and perceptions of the residents regarding the metering system and the descriptive statistical analysis was used to determine the results. The analyses presented from the statistical analyses also draw on the key variables presented in every empirical chapter. The questionnaire for this study consisted of 22 questions which were administered to the Harare residents who were systematically sampled from the low, medium and high-density residential areas. The questionnaire guide was divided into four sections that addressed the major research objectives as explained below:

- Section A: Demographic Information.
- Section B: Knowledge of potable water usage.
- Section C: Perceptions of the Harare residents with regards to the effectiveness of prepaid water meters.
- Section D: The technical capacity of the Harare City Council to provide potable water through prepaid water meters.

1.8.2 Key Informant Interviews

Key informant interviews were held with ten low, medium and senior management Harare City Council employees in understanding the council's technical capacity and perceptions of the residents towards prepaid water meters. Data gathered from the key informant interviews concentrated on the factors surrounding the technical capacity of the Harare City Council in efficiently implementing prepaid water meters. Hence, a key informant interview guide which highlighted two sections, in understanding objective two and three from the Harare City Council's perspective was used for data gathering. Key informant interviews were used to collect data and the specific research questions were used in scheduling the interview guide. Remler and Van Ryzin (2011) confirm that key informant interviews can be telephonic or face to face and a friendlier environment allows the participants to talk openly. Key

informant interviews are particularly appropriate when the participants might not be able to come together in a focus group. Thus, face to face key informant interviews were held with ten Harare City Council officials in understanding their technical capacity as the Harare city council to provide potable water to the residents through prepaid water meters. A sample of 10 employees who were purposively sampled based on their knowledge of the Harare City Council's prepaid water implementation policy was used for the key informant interviews. The interview guide for this study consisted of 13 open-ended questions which were asked and discussed with the Harare City Council authorities that were purposively sampled. The interview guide was divided into three sections that addressed the major research objectives as explained below:

- Section A: Demographic Information.
- Section B: Perceptions of the Harare residents with regards to the effectiveness of prepaid water meters.
- Section C: The technical capacity of the Harare City Council to provide potable water through prepaid water meters.

1.8.3. Focus group discussions

A focus group discussion is a form of a group interview in which there are several participants, with the addition of a facilitator who asks questions and guides the discussion. Remler and Van Ryzin (2011) note that a focus group is a qualitative research instrument with interviewing procedures and it involves six to twelve participants. The researcher conducted two focus group discussions with each group consisting of ten participants who were guided by a moderator. These participants were inclusive of the CHRA and the Harare Residents Trust officials who form the civil organizations that are key springboards and catalysts between the Harare City Council and Harare residents. The focus group discussion schedule guide for this study consisted of 10 open-ended questions which were asked and discussed with the Harare resident's association's officials that were purposively sampled. The focus group discussion schedule guide was divided into two sections that addressed the major research objectives as explained below:

- Section A: Perceptions of the Harare residents with regards to the effectiveness of prepaid water meters.
- Section B: The technical capacity of the Harare City Council to provide potable water through prepaid water meters.

1.8.4 Secondary Data

Through an extensive literature study, the researcher also used data from legislative frameworks, published and unpublished reports and peer-reviewed journal articles on potable water provision and prepaid water meters to corroborate primary data that was gathered from primary sources. This is because secondary data has the potential to provide precision, convenience, and affordability to research (Mpofu, 2011).

1.9 LINK BETWEEN RESEARCH QUESTIONS TO SOURCES AND METHODS AND JUSTIFICATION

The table below gives an outline and justification of the link between each research question and the methods of data.

Table 2 Link between research questions to sources and methods justification

Research Question	Source and Methods	Justification
1. To establish the fundamental link between HRBA and systems theory to service delivery in the implementation of prepaid water meters.	-Secondary Data	-It provided precision in aligning the theories in which the study is grounded.
2. To identify the perceptions of the Harare residents regarding the effectiveness of prepaid water meters for service provision.	-Questionnaires -Focus Group Discussions	- It enabled the provision of a measurement of the perceptions of the residents. -They provided in-depth information on the perceptions of the resident's views
3. To investigate the technical capacity of the Harare City Council authorities in providing potable water to the residents through prepaid water meters.	-Key informant interviews	- They aided in understanding the technical capacity of the Harare city council to provide potable water through prepaid water meters.
4. To explore and recommend the appropriate alternative strategies for potable water provision in Zimbabwe.	-Questionnaires -Focus Group Discussions -Key informant interviews	-A summation of all the findings was used to explore and recommend on alternative sources of potable water provision

Source: Own illustration (2017)

1.10 DATA ANALYSIS AND VALIDATION

Data analysis involves bringing order, structure, and meaning to the mass of collected data (Mpofu, 2011). The researcher used content analysis for the focus group discussions and the interviews because it has a descriptive presentation of data gathered as widely used in qualitative research (Bak, 2004). Thematic analysis was also used to allow the researcher to discuss the common and recurrent themes from the data gathered from respondents and secondary data. Quantitative data that was gathered from the structured survey questionnaire was analyzed and presented through descriptive statistical methods and graphical presentation using the SPSS version 23. The descriptive statistical analysis involved counting the frequency of variables and then presenting the information in a comprehensive graphical presentation of charts, tables or scales. Variables which include technical capacity, economic challenges, corruption, water quality, dilapidated infrastructure and the varying socio-economic dynamics were used as significant variables in the analysis.

1.10.1 Validity of the study

Validity is the point at which the research instrument measures what it actually intends to measure. Thus, validity indicates whether the research instrument essentially measures what it is meant to measure, given the applicable framework (Babbie & Mouton, 2002). Cooper and Schindler (2003) sustain that validity is the degree to which variances in observed scale scores replicate true variances between the characteristics of the objects being measured, rather than the systematic error. Therefore, to ensure validity the researcher was assisted by three statisticians to assess the research instruments for clarity and ultimately pre-testing them in a pilot study. Validity was also enabled in this study, through the adoption of Harare as a case study and Newman and Benz (1998:66) affirm that, “adopting case studies increases validity because they reflect on different but significant acumen by reflecting on the efficacy of prepaid water implementation”.

1.10.2 Reliability of the study

Reliability is defined as the extent to which a research inquiry or any procedure produces the same results in repeated trials, (Cooper & Schindler 2003). Reliability,

according to Bak (2004) is the extent to which a scale produces consistent results if measurements are made repeatedly on the same characteristics. The researcher took measures that helped reduce the measurement error by asking consistent questions to respondents and reducing coverage errors by including three target populations.

1.10.3 Credibility of the study

Credibility in qualitative research is closely comparable to validity in quantitative research. Furthermore, qualitative research acknowledges how the social phenomenon can be elucidated on through numerous accounts as derived by the researcher. Hence, Bryman (2015) expounds on how harnessing more than one data collection tools enables an improvement in the credibility of the study in warranting respectable practices in qualitative research. Subsequently, the author also took adequate action which warranted credibility of the study by employing key informant interviews, focus group discussions and an extensive literature study in comprehending the efficacy of prepaid water meters for potable water provision.

1.10.4 Conformability of the study

Conformability in qualitative research is explained as the extent to which a study attempts to validate the research findings of the study in such a way that they can be validated by another researcher (Bryman, 2012). Anney (2014:279) affirms that conformability is a direct counterpart of objectivity in quantitative research since conformability in qualitative research enables eliminating personal bias in the context of every element underpinning the research study. Resultantly, the notes from the key informant interviews and the focus group discussions were recorded as gathered from the respondents and the notes were also transcribed in the same manner to eliminate any bias from the researcher.

1.10.5 Dependability of the study

Dependability in social research methods is defined as the overall extent of the thoroughness and attentiveness warranted in the documentation and outline of the study in a coherent manner (Mpofu, 2011). This measure of ensuring trustworthiness of this study in qualitative research is a direct equivalent of reliability in quantitative

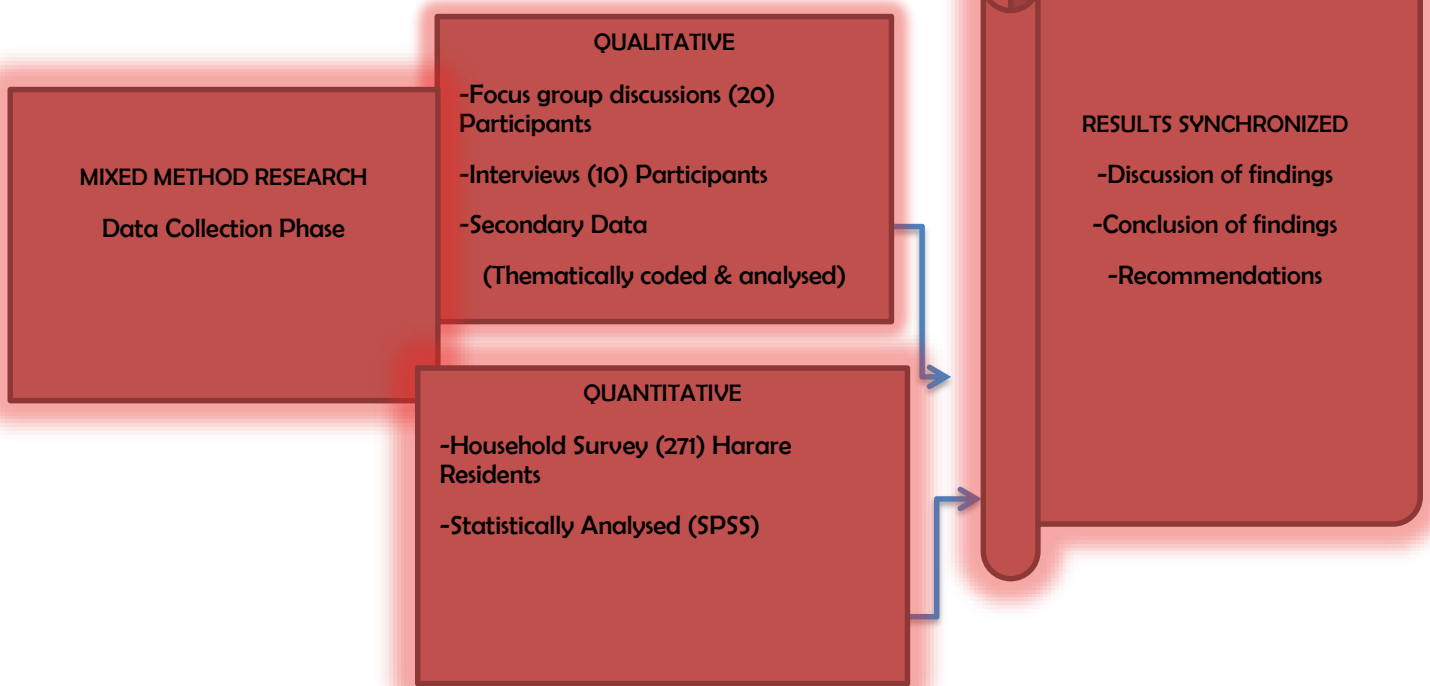
research as argued by (Newman & Benz, 1998:68). The application of credible research is directly tied to the formation of dependability of the study in retrospect (Anney, 2014). Consequently, to ensure dependability of the study, the researcher also triangulated data collection methods since (Bryman, 2015) expounds how connecting more than one data collection tools facilitate credibility of the study. Furthermore, data from the extensive literature study, key informant interviews, and focus group discussions were also thoroughly double-checked to align it to the research objectives of the study.

1.10.6 Transferability of the study

Bryman (2012:392) confirms how the research findings of any research study should provide lee-way for further studies to be undertaken in finding the conceivable transferability of the study to other backgrounds. Qualitative research focuses on deducing the significance of findings from a particular context of the phenomenon within a small population as compared to quantitative research. The researcher should always ensure that another independent researcher is able to distinguish whether the research findings are transferable or not and how to confirm transferability (Cooper & Schindler 2003). The only way in which this can be made possible in ensuring transferability is by explicitly declaring the research objectives, research design and analysis procedures (Neuman, 2006:149). Thus, the researcher proffered recommendations for further study based on the key findings of the study in ensuring transferability of the study.

1.11 FLOWCHART OF THE RESEARCH PROCESS

Figure 1 Flowchart of the research process



1.12 DELIMITATIONS

The focus of this research was only limited to the Harare City Council and residential areas within Harare that were systematically sampled since Harare is the pioneer of prepaid water meter implementation in Zimbabwe. The research participants only comprised of systematically sampled Harare residents and purposively sampled Harare City Council officials and Harare resident's association's officials.

1.13 STRENGTHS OF THE STUDY

The strengths of this study are hinged upon the mixed method approach which strokes a balance in bridging the responses of all the relevant stakeholders involved in the service provision and utilization of potable water, with regards to prepaid water meter implementation. This study also triangulated theories to tackle the variables from a different perspective and ultimately grounded all the objectives and responses in solid theory. Furthermore, an integration of all the responses from all the respondents provided a pathway on how prepaid water meters can best benefit the public and the Harare City Council, through a proposed framework. The aim of the study was to extensively improve the lives of the residents by recommending on the

most appropriate water provision tools by reflecting on what has worked or failed for other developing and developed nations since it is the first time in 38 years for Zimbabwe to implement a new service provision tool.

1.14 LIMITATIONS OF THE STUDY

Creswell (2003) acknowledges that explaining the limitations in research enables the readers to assess findings and provide opportunities for further research gaps. Thus no matter how careful researchers plan to conduct different types of studies, limitations exist in all research (Cooper & Schindler 2003:23). While the Harare City Council has several residential areas the research mainly focused on the residential areas which have already piloted the prepaid water meters. Financial constraints also limited the researcher from covering a wider sample. The sensitivity of the research topic was also a hampering factor in reaching all the intended participants considering the current volatile socio-economic and political status of Zimbabwe as a failed state.

1.15 RESEARCH ETHICS

Bak (2004:28) acknowledges that research must show an awareness of the ethical considerations and an agreement to conduct the research. Clarification was provided pertaining to how data collected for the study was used and the participants were informed that the researcher is a Ph.D. student carrying out research specifically for academic purposes. Any possibilities of plagiarism were eliminated from the secondary data that was reviewed to corroborate the primary data.

1.15.1 Maintaining Privacy and Confidentiality

Babbie and Mouton (2002:521) ascertain that maintaining privacy and confidentiality enables information to be handled in a classified manner. Kumar (2005:214) affirms that the principles underlining research ethics concern issues such as honesty and respect for the rights of participants. In this study information that identifies a participant by name was not disclosed, resultantly the respondent's rights to privacy and confidentiality were protected.

1.15.2 Informed consent

Informed consent ensures the full knowledge and willingness of subjects to the research process and in this study participants were informed of their right to withdraw from the study at any stage of the research. Babbie and Mouton (2002:521) note that in research, subjects are not forced into participating because the process has to be voluntary. In this study participants were not coerced into participating hence there was voluntary participation which allowed the researcher to collect data from willing participants through their own consent. Written consent from the North-West University Ethics Committee was sought before conducting the research and an ethics certificate was awarded.

1.15.3 Risks and benefits

It is important for the researcher to identify any possible forms of harm to the participants in the research project and if there is the possibility of harm the researcher has to make sure the risk is minimized. Participants should be debriefed on the risks if any and the researcher should also pronounce the possible benefits of the research, however, the researcher should not do this in a manner that highlights aspects of bribery (Creswell, 2003). Minimum risk means that the extent of harm in the study will not be greater than that which is ordinarily encountered in daily life (Kumar, 2005:214). In this study, harm was minimized by avoiding violation of rights to which every respondent was entitled. Participants were informed beforehand of the potential risks and benefits of the study to enable the subjects an opportunity to withdraw from the study if they desired to do so. In the event that any unintended risks or harm were to arise, the respondents or the researcher were to be assisted through referral for debriefing in public institutions. To mitigate any risks or harm, research assistants with sufficient expertise and experience to conduct research in Zimbabwe assisted and monitored the researcher in the field to ensure the researcher did not divert from the intended research plan. In the event that any unintended risks were to arise, the respondents or the researcher were to be assisted through referral to a public social worker or public psychologist from the government, since it was important for the safety of everyone involved in the research process.

1.15.3 Recruitment and enrolment

The researcher as the chief investigator was the moderator for the focus group discussions in an attempt to keep the discussion on track by engaging the research participants in the discussions. Responses were recorded using a voice recorder and research assistants were taking notes to provide back up for any malfunctions of the voice recorder. Research assistants were therefore recruited to assist the chief investigator with administering questionnaires to the Harare residents.

1.15.4 Dissemination of research findings

The researcher will distribute copies of conclusions and recommendations drawn from the study to the Harare city council authorities, Harare Residents Trust and the CHRA. The researcher has also been presenting the findings of the research at national and international conferences and seminars as a means of disseminating the information to various relevant stakeholders. The researcher has also submitted manuscripts to peer-reviewed journals to disseminate the findings of the study.

1.16 SIGNIFICANCE OF THE STUDY

The city of Harare was the main test case for prepaid water meter implementation in Zimbabwe and the Harare city council confirmed that no doctoral research has been undertaken on pre-paid water meters in Harare or elsewhere in Zimbabwe. From a policy and potable water provision perspective, the significance of this research lies in the essence of prepaid water meters being a new and different billing system to be implemented in the history of Zimbabwe since independence in 1980. The prepaid water metering system is entirely new to Zimbabwe and it was essential to realize the changes that prepaid water meters will present to the residents and the Harare City council as a potable water provision tool. The few non-academic types of research that have been undertaken on prepaid water meters in Zimbabwe were one-dimensional and they would only incorporate the views of one stakeholder, ignoring the obligation of the other stakeholders in the service provision and utilization process. The research findings of this study contributed to the present on-going dialogues surrounding prepaid water meters in Zimbabwe and through publications transcending on a global discourse on potable water provision. The study presented a systematic body of research on the opportunities, limits, costs,

and benefits of prepaid water meters towards potable water provision based on extensive literature from past experiences of other nine developing and developed nations.

The mixed method approach strikes a balance in bridging the responses of all the relevant stakeholders involved in the service provision and utilization of potable water. These responses were incorporated in mapping the way forward on how prepaid water meters can best benefit the public and the Harare City Council for potable water provision, based on the responses from all the research participants. The aim of the study was to extensively highlight the views of all the stakeholders in deriving recommendations for sustainable water provision tools by reflecting on what has worked or failed for other developing and developed nations. Resultantly, the capacity of the Harare City Council was also better equipped to efficiently deliver potable water for future investments. This was enabled by recommending the public and the service provider to optimize the benefits of accessible, sustainable and improved potable water services in Harare, through the proposal of a framework for sustainable potable water provision.

1.17 CHAPTER LAYOUT

1.18.1 Chapter One: Orientation and background

This chapter provides the introduction to the research with reference to the orientation and background of the study, problem statement, research questions, and objectives. This chapter also outlines the research design, target population, sample and sampling techniques of the study. The chapter further gives a description of the data collection instruments and the data analysis techniques that were applied in the research.

1.17.2 Chapter Three: Theoretical and Conceptual Frameworks for potable water provision

This chapter provides a comprehensive elaboration on the fundamental link that exists between the HRBA and the systems theory of service delivery on potable water provision.

1.17.3 Chapter Four: Citizen Perceptions of the effectiveness of prepaid water meters in Harare

This chapter identifies the perceptions of the Harare residents regarding the effectiveness of prepaid water meters for actual water service delivery. The context of prepaid water meters was extensively discussed by highlighting on an expanse of literature on the link that exists between prepaid water meters and potable water.

1.17.4 Chapter Five: Prepaid water meters: Comprehending the technical capacity of the Harare City Council to administer them

This chapter investigates on the technical capacity of the Harare City Council authorities in providing potable water through prepaid water meters to the residents. An elaboration of the situational analysis of Harare City Council in sustaining the prepaid water metering system was also done in this chapter.

1.17.5 Chapter Six: Reviewing prepaid water meters: Towards alternative strategies for potable water provision.

In this section of the research, water provision tools that can be implemented along with the prepaid water meters by the Harare City Council to ensure effective public water provision were explored. The exploration was done based on the responses from the residents and the Harare city council authorities, regarding the effectiveness of prepaid water meters on the human right to potable water.

1.17.6 Chapter Seven: Conclusions and policy implications

This chapter presents a synthesis and conclusion of the study findings and concludes with suggestions for further research, through a proposed framework for potable water provision.

1.18 CONCLUSION

The provision of the potable water crisis in Zimbabwe is a governance crisis which has necessitated for the design of a new water provision tool. The effective implementation of this tool will only be successful with due consideration to inclusive stakeholder engagement and pro-poor approaches. However, water provision reforms through the operationalization of strategies for the provision of safe potable

water to the populace requires funds that Zimbabwe, like most developing countries often fail to secure. Thus, other than potable water availability issues and rules imposed due to the political situation, Zimbabwe faces the predicament of lack of funding in efficiently delivering the prepaid water meters. This is because the general headlines for potable water provision challenges are budgetary, regulatory, policy-inclined, stakeholder-oriented and lack of foreign direct investment to augment funding. In summation, this section of the study was successful in clearly introducing the study and the problem statement of the study. This chapter also particularized on the delimitations, strengths and limitations and research ethics that were aligned with the research.

This section of the research was also clear in indicating the research methodology that was employed to enable data collection and data analysis. The researcher explained the research processes undertaken in respect of this study in comprehending the efficacy of prepaid water meters for potable water provision. Hence, this section of the study clearly outlined the research methodology that was harnessed as appropriate for this research. As a result, the research design was highlighted on by validating the motivation for employing the mixed method approach as applicable. A clear summary of the research population and how it was sampled and selected was also highlighted in this section of the research. Data collection instruments that were appropriate for this research based on the selection of the research design are also discussed in detail. As a result, the data analysis approaches selected were also discussed while also explaining how the researcher ensured validity and reliability of the research study results based on the applicable ethical principles when undertaking a study of this nature. The purpose of the forthcoming chapter is to give a theoretical exposition of the theories and conceptual frameworks of potable water provision in the context of prepaid water meters. The other three chapters of the thesis were divided into empirical chapters based on research questions 2, 3, 4 and 5. The third research question was merged with the fourth research question to construct one chapter which sought to understand the changes that prepaid water meters present for the residents and the Harare City Council in the context of the legislative frameworks of water service provision in Zimbabwe because there was an overlap in literature.

CHAPTER TWO

THEORETICAL AND CONCEPTUAL FRAMEWORKS FOR POTABLE WATER PROVISION

2.0 INTRODUCTION AND BACKGROUND

This chapter provides a comprehensive elaboration on the fundamental link that exists between the Human Rights Based Approach (HRBA) and the systems theory of service delivery on potable water provision, within the context of prepaid water meters. A discussion into the aspects of these theories was undertaken by combining them to create various combinations that were aimed at addressing each research question of the study. The aim of this chapter was to enable the creation of a greater understanding of the research problem, beyond one specific theory, and to highlight how the perception of the residents and the technical capacity of the Harare City Council are equally significant to this study.

Cosgrove and Rijsberman (1998); Cronk, Slaymaker, and Bartram (2015) affirm that most theories of access to potable water supply remain comparatively understudied. Rising consternations on the effects of lack of potable water supply have been rampant in developing nations with arguments rising on what better metrics can be used to ground potable water supply in an applicable theory in the post-2015 epoch (Hutton, & Chase, 2016; OXFAM, 2011). In addition, slight rationalization, if any has been essentially provided in these developing nations to bridge the gap between the mandate to service provision and actualization of human rights in the pretext of prepaid water meters for potable water provision. However, this study highlights how the HRBA and the systems theory to service delivery acknowledge the adverse effects of lack of potable water supply such as death due to water shortages which are directly linked to water-borne diseases (JMP, 2017; UNICEF, 2016; WWAP/UNESCO, 2006). Additionally, this study has evidence that suggests that access to the potable water supply can be theoretically grounded from a multi-dimensional approach in comprehending the efficacy of prepaid water meters in Harare.

In principle, the State of Zimbabwe has a constitution that values the essence of socio-economic rights by constitutionally obligating the State to efficiently and equitably deliver services such as potable water to the public (Constitution of Zimbabwe, 2013; ZIMASSET, 2013; Mudzingwa, 2015; Gambe, 2013). However, despite its constitutional obligation, Zimbabwe has been constantly plagued by bouts of economic dry spells whose adverse effects have not spared both the service provider and the service users in terms of accessibility and availability of potable water supply (CHRA, 2015; Chatiza, 2016). Conversely, the Harare City Council is currently undergoing the implementation of prepaid water meters in a country that has been classified as a failed state, given the economic dry spells amongst other factors (Mudzingwa, 2015; CHRA, 2015). Available literature on prepaid water meters has either solely framed the context of prepaid water meters from a human rights perspective or solely from a service provision context (Abu-Hilou and Jarrar, 2010; Von Schnitzler, 2013; International Water Association 2004).

On the other hand, the objective of this section of the study is to succeed in advancing the collective understanding of the human rights fundamentals to water in essence of the service provision cycle as a continuous system, within the complexities of potable water provision. One of the contestations in realizing efficient and effective service provision in developing nations is the inability to meet the basic human right to water (Folifac, 2007; Gleick, 1998; Coutinho, 2010). However, advocates of the human rights-based approach to water fail to comprehend that achieving the human right to water essentially involves planning and managing the service provision cycle as a system (Gleick, 1996; Niklas, 2013). Furthermore, Bakker (2007); Bakker (2012); GOB (2012); Matabvu (2015) establish that, proponents of the human rights-based approach place more significance on safeguarding the right to water, while disavowing the dynamics of water demand management in the context of institutional sustainability. As a result, this study establishes the interrelationship or synergy between service provision and human rights to water which should be highlighted to ensure the satisfaction of both the service users and service providers with prepaid water meters for potable water provision. This simply implies that realizing the human right to water is as crucial as realizing the continuance of institutional sustainability in the milieu of service

provision which is the principal gap that this study aims to fill with a modest contribution on its own.

2.1 THE IMPLICATIONS OF THEORY TO PUBLIC ADMINISTRATION

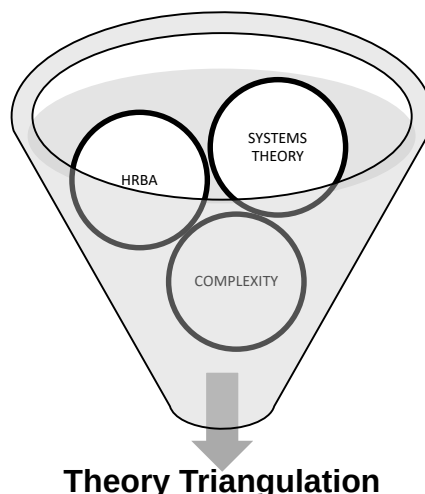
Oxford (1995) defines a theory as an abstract notion of generality which is not content specific or broad but it reflects a general idea with regards to a certain set of specific values which are regarded as significant. Hence, Swart and Pettipher (2005) suggest that the significance of a theory lies in its essence of providing a set of structured principles with appropriate information which creates an understanding of a specific phenomenon. Van de Ven (1989) also confirms that theory provides a one-sided account of the multifaceted existing global village, as a result, it permits the researcher to develop a network between the abstract and the empirical. This section of the chapter explains the theoretical and conceptual frameworks that were taken as a point of departure in answering the research questions. The theories and concepts sought to clarify on service provision and potable water as a human right within a whole system for potable water provision. This research was therefore grounded in the application of a Human Rights Based Approach and the Systems theory to service delivery to ensure that all the research questions were guided by solid theoretical contexts. The study ultimately employed the complexity theory as a summative theory that bridges the rift between the underlying overlaps of the two significant theories to this study.

2.2 THEORY TRIANGULATION IN RESEARCH

The HRBA and Systems theory of service delivery were triangulated in the research to ensure that all the research questions were grounded in theory. The HRBA was meant to ground the research questions from the resident's perspective whilst the Systems theory to service delivery was meant to ground the research questions from the Harare City council's perspective as the system in charge of potable water provision. The complexity theory was ultimately harnessed to incorporate the drawbacks of either theory in drawing solid conclusions to the research study. Studies have revealed that theory triangulation enables validity and credibility of research results, preferably in qualitative studies (Babbie & Mouton, 2002; Cooper

and Schindler, 2003). Likewise, Cohen and Manion (2000) define data triangulation as the process that enables cross-verification of data by employing more than one theory. As a result, theory triangulation upholds the elimination of bias in research through the multiple tests from the various theories. It is against this background that, Denzin (2006); Kumar (2005) affirm that the theory triangulation deepens and widens the crux of the research through infusing improvement into the research results. Cohen and Manion (2000) also acknowledge that “triangulation is an attempt to fully map out the richness and complexity of human behavior by studying it from more than one standpoint”.

Figure 2 Theory Triangulation



Source: Own Illustration (2017)

2.3 CONCEPTUALISING POTABLE WATER

In conceptualizing potable water (UN, 2013; Bain et al., 2014) assert that freshwater presently occupies 2, 5% of the surface of the earth by covering rivers, lakes, wells and other water reservoirs. UN (2013) further articulates that 2, 5% of that freshwater, an average two-thirds of it is in the form of ice glaciers, which translates to at least 0, 007% that is only is available as potable water for humankind. Cap-Net (2009); Lougheed (2013) note that, the human anatomy comprises of an average of 75% of water, which is a key component in the biological progressions on which humanity is dependent upon. 75% is a significant number to which this study

accentuates that the absence of potable water has a direct causal link on the ultimate sustainability of human life. Hence, Folifac (2007) notes that “All life is dependent on water to survive” and thus “water sustains all”.

Bain et al., (2014) defines water as, “a liquid without color, smell or taste that falls as rain and is present in lakes, rivers, seas which can be used for drinking, washing and other varied uses”. This description of water implies that when water develops an odor, then its original state has been altered and it is no longer suitable for consumption. Cosgrove and Rijsberman (1998); Cronk, Slaymaker, and Bartram (2015) further espouse that potable water is an understated public resource that is inclined to contamination, such that it is the responsibility of human beings to preserve the resource. Likewise, this study stresses that since humankind is dependent upon potable water for survival, it is their responsibility to ensure the preservation of water, especially in the context of human rights to water when humankind feels entitled (Cap-Net, 2009; Hinkfuss, 2013). Hence, the theoretical and conceptual frameworks of potable water provision have the potential to either advance humankind or propagate poverty and inequality in terms of availability, affordability, and accessibility of potable water, within the confines of prepaid water meters.

2.4 ACCESS TO POTABLE WATER IN LOW-INCOME HOUSEHOLDS

Access to potable water plays a tremendous role in low-income households more than it does anywhere else such that ensuring access to potable water is accepted as a human right for all (Cook, Kimuyu, & Whittington, 2016; Majuru, Mokoena, Jagals & Hunter, 2011; ZIMASSET, 2013). Hence, the UNDP (2013); WHO (2015) confirm how the human rights-based approach is a significant theoretical framework that also grounds the achievement of human rights towards potable water provision through effective development and cooperation. Human rights advocates argue that prepaid water metering promotes water privatization and commodification, thereby treating water as an economic good and alienating the poor from accessing water, which is one-sided and irrational (Chatiza, 2016). Simultaneously, from a public service provision perspective, water pricing is a clear reflection of the dynamics surrounding costs of water supply, non-revenue water, water reticulation and

wastewater treatment, which is essential to ensure organisational continuity (Machingauta, 2010; Ackerman, 2004). Therefore, this implies that pricing of potable water is not necessarily meant to alienate the poor from accessing services; however, it is also a measure to promote the reduction of the improvident use of water from the non-payers.

Likewise, prepaid water meters have been argued to be potable water provision tools that restrict or inhibit users from consumption if they do not have credit (Gambe, 2013; Chaminuka & Nyatsanza, 2013). However, prepaid water meters are also considered to be tools that encourage citizens to limit potable water consumption by encouraging payment for services and encouraging the efficient use of potable water as responsible citizens (Gambe, 2013; Chaminuka & Nyatsanza, 2013). The Harare residents, particularly those within low-income households argue that prepaid water meters will further widen the gap between the rich and the poor, citing that the meters will limit access to water supply due to their meager incomes (Mudzingwa, 2015; Matabvu, 2016). Robert and LeRoy (1993); Nhema and Zinyama (2016) avow that the human rights-based approach to water articulates on prioritizing access to basic water for all and enabling pro-poor policies in the use of resources rather than implementing new infrastructure which does not benefit the poor.

Given the escalation of poverty and inequality in Zimbabwe, studies reveal that a greater population of the citizens are neither employed in formal employment or having access to sustainable forms of income because they do not have direct access to money by reflecting on the cash crisis that is prevalent in Zimbabwe (WB, 2015; Musingafi and Chadamoyo, 2013). This clearly reflects on the significance of access and affordability of potable water in a country whose economic profile is dismally blurred as evident with high unemployment, poor-paying jobs or piecemeal work. The implementation of prepaid water meters would imply that a majority of these low-income households would have to dedicate a significant amount of their meager income towards potable water payment and thus prepaid water implementation will further strain the evident affordability constraints. Blackman and Atkinson (1997); Sullivan (2002) insist that there is a direct causal link between access to potable water and human development such that lack of potable water leads to “water poverty” and ultimate absolute poverty. Meena, Lee, and Samulon

(2006); Savenije (1998) also avow that, standards of living for low-income households can only be increased with the intensification of water consumption per capita because its accessibility is directly tied to socio-economic growth and development.

2.5 CONCEPTUALISING HUMAN RIGHTS

Graham, Hirai and Kim, (2016) confirm that human rights are ordered through international, regional and national legal structures which institute a set of principles against which relevant stakeholders including the State can be held accountable at all societal levels. This study asserts that human rights can be maintained as collective legal agreements that enable the protection of specific individuals and groups of people from certain actions and oversights that infringe on key liberties, privileges, and humanity. Thus the UN-Habitat (2009); Constitution of Zimbabwe (2013); Makwara (2011) affirm that human rights essentially enable Governments and the relevant stakeholders from engaging in certain activities and also inhibit them from engaging in certain activities. OECD (2017) approves that based on these descriptions, the main attributes of human rights are:

- Are universal for all humankind
- Focus on the main characteristic of humans as equal
- Cannot be relinquished
- Enforce compulsions of action and inaction on States and the stakeholders
- They are internationally guaranteed
- Are legally preserved
- Safeguard specific individuals and specific groups

WHO (2010); UNDP (2013) essentially note that some human rights are progressive while others are immediate and the standards of human rights have continuously been refined in recent years. It becomes rational to note that nation States and relevant stakeholders have to constantly ensure the progression to the realization of human rights. It is against this background that the study argues that, the prepaid water meter implementation in the Harare City Council should ensure that the human right to water is not nullified. Hence, Makwara (2011); OECD (2017) confirm how

countries are mandated to facilitate the achievement of human rights by proactively engaging in actions that strengthen the citizen's ability to achieve their needs as per demand ratio. As a result, from a human rights perspective, service provision goes as far as adopting alternative mechanisms, when direct provision fails to materialize or in situations when the public is unable to provide for themselves. This is because the human rights law argues that an absence of resources has the potential to infringe on the fulfillment of human rights (WWAP/UNESCO, 2006; Wutich, Beresford & Carvajal, 2016).

2.6 THE HUMAN RIGHTS-BASED APPROACH

The HRBA to potable water has been constantly deliberated on over the past decades since water is the second most immediate element after air which humans need to survive (Gleick, 1998; Folifac, 2007). Hence, the immediate link between water and life has enabled the mainstreaming of the right to potable water to be directly linked to the acceptance of the HRBA (Bakker, 2012). It is however ill-fated that the recognition of the human right to potable water has often been related to anti-privatization agendas (Tully, 2005; Chatiza, 2016). However, Makwara (2011) notes that the HRBA clarifies on the right to potable water as being built upon the understanding that the government has the duty to provide its realization in service provision to all. As a result, the HRBA is central to the study because prepaid water meter implementation should not be done in the absence of the public who are the key users of potable water. Public service provision should be participatory and consultative of the public and all the relevant and crucial stakeholders in the policy implementation process. Dreze (2004); OECD (2017) espouse that, significant soft law instruments confirm the actuality of the human right to potable water since 1999 when the United Nations General Assembly established the recognition of the right to potable water.

In addition to the soft law instruments, the Committee on Economic, Social and Cultural Rights also confirm the right to potable water within the context of the International Covenant on Economic, Social and Cultural Rights (WHO, 2015). The committee defined the right to potable water as “entitling everyone to sufficient, safe, acceptable, physically accessible and affordable water” (Dreze, 2004). It, therefore,

becomes the responsibility of the government to ensure the realization of human rights, through the potable water provision, since it is their primary obligation to safeguard the constitutional rights (Makwara, 2011). Hence, this study supposes that the contextual policy of prepaid water meters should necessitate deriving insight from the actual obligations of the government in the context of the human right to potable water. In the same light Ashok and Sadig, (1998) espouse that as much as it is the duty of the government to provide services; this does not imply that it is the only stakeholder responsible because it is also the duty of the citizens to ensure that they pay for services provided within the stipulated ration

Machingauta (2010); OECD (2017) indicate that human rights and service delivery have increasingly been at crossways with the advent of the 21st century for developing nations, nonetheless, the striking likeness between human rights and service delivery has also been noticeable. Conversely, Kasrils (2001); Makwara (2011) argue that human rights and service provision are compatible and congruous so they should sufficiently complement each other despite being dissimilar in stratagem. UNDP (2013) defines HRBA as, “a conceptual framework for the process of human development that is normatively based on international human rights standards and operationally directed to promoting and protecting human rights.” Hence, this study argues that human rights aim to dissect the social inequalities that are at the core of development by addressing the fractional practices of the past, which is also the same pretext under which public service provision essentially aims to do.

Likewise, a study conducted by the United Nations High Commissioner for Human Rights asserts that “the human right to potable water entitles everyone to access to a sufficient, safe, physically accessible and affordable amount of safe drinking water for personal and domestic uses” (JMP, 2017). The study concluded that access to potable water should not be discriminatory and thus it should be sufficient and accessible in adequate amounts for household use (JMP, 2017). Furthermore, proponents of the HRBA maintain that access to potable water should be free and as a result should be viewed as a legal privilege for humankind, without being certified as a commodity or a service to which payment is entitled (Harris, Goldin, & Sneddon, 2013; Harvey, 2005). This study, however, argues that, from a service delivery

perspective, in the context of Zimbabwe, potable water should be made accessible, but it would not necessarily be reliable enough to simply make it accessible for free.

UNDP (2006) confirms that human rights and service delivery both have the intention to uphold the welfare and freedom of humankind from an objective. This simply implies that human rights and service delivery essentially share the same objective of enhancing the lives of citizens with the best probable resources. Additionally, public services and human rights are also two sides of the same coin by virtue of reflecting a central objective, which is having people at the core of institutional policies. Chatiza (2016); Matabvu (2016) confirm that, from a human rights perspective, state actors and relevant stakeholders are obliged to enable and promote development and when human rights are not realized these stakeholders can be held accountable for their actions and inactions. In recollection, (CHRA, 2015; Machingauta, 2010) espouse how the idea of holding the state and state actors accountable within a social system also pointedly reflects on the scope of service provision in which public office bearers can be held accountable by the public. Likewise, this study asserts that public services in the right frame actually help to inform the stratagem necessary to ensure the realization of human rights for ultimate socio-economic development of citizens. Basically, this implies that the realization of human rights requires more than just financial capacity but political will from the State and State actors. Hence strong political will from the State in cases where resources are limited in the fulfillment of a human right is a key tool to efficiently achieving human rights for all humankind as highlighted below.

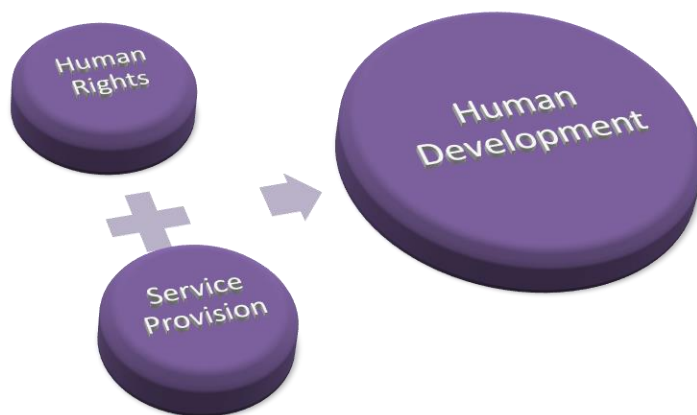


Figure 3 the core of human rights and public service

Own Illustration (2017)

This study cites that there is a strong correlation between human rights and policy implementation in service provision because for countries with political inequalities the realization of human rights is a mere delusion. In the abstract, human rights can only be accomplished in a political setting which is striving to accomplish its public service objectives to the citizens (OECD, 2017; Makwara, 2011). This simply implies that in as much as the realization of human rights can be advocated for in the absence of a solid public service framework, then the discourse of human rights is a plain ideology (Harvey 2005). Gleick (1998); Coutinho (2010) avow that potable water should not be equated to private services as espoused by the international privatization agenda because potable water is a public good. Thus it is the mandate of the government to ensure the realization of human rights by enabling citizens to have access to potable water without any abrupt disconnections in the context of prepaid water meters.

It is against this background that Harvey (2005); Chatiza (2016) and (Matabvu, 2016) highlight on the contestations that exist between human rights and the capitalistic nature of the public service in present day. Similarly, it is these contestations that have apparently caused so much spirited resistance from the Harare residents against the prepaid water meter implementations citing negation of human rights. In

fact, the Harare city council is counter-arguing that the public service is a system that is heavily reliant on financial cash flow to sustain it as a sustainable ecosystem (Gambe, 2013; Chaminuka and Nyatsanza, 2013). As a result, the public should also fulfill their role as responsible citizens in paying for public services. The United Nations Committee on Economic, Social and Cultural Rights (UNCESCR) espoused the general comment No. 15 which affirms the human right to water by avowing that, “The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses”, as diagrammatically explained below (WHO, 2010; UN-Habitat, 2009).

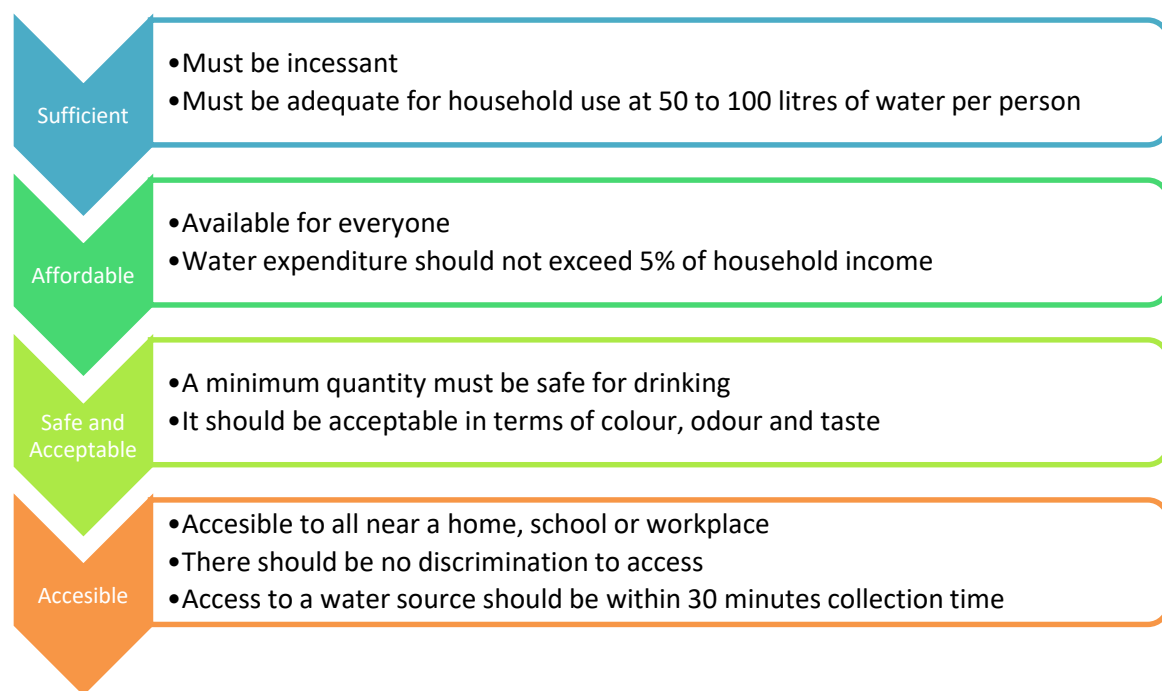


Figure 4 Principles of the human right to water

Source: Adapted from (WHO, 2010)

The Crisis in Zimbabwe Coalition (2010) also identifies these factors as indispensable in the comprehension of the human right to potable water in Zimbabwe:

- Potable water should be available, adequate and in continuous supply for domestic use.
- Potable water quality should be innocuous, odorless, tasteless and appropriate for domestic use.
- Potable water supply should also be accessible to all in its four scopes which are non-discriminatory, physical, financial, and information.

Hausermann (1998) notes that the international conventions on children's rights, elimination of all forms of discrimination against women, the rights of persons with disabilities, the international labor organization, and the world health organization are some of the international instruments and organizations which unequivocally recognize the human right to water. This implies that the human right to water is internationally accepted by most non-governmental organizations and international organizations in developing and developed nations as an inalienable right as espoused through the various ratified treaties on access to potable water (JMP, 2017; WHO, 2010). While access to potable water is denoted in several internationally binding treaties, the human right to water is however yet to be overtly declared as a distinct right in its own capacity (The Crisis in Zimbabwe Coalition, 2010; CHRA, 2015). The right to the utmost possible level of physical and psychological health is recognized in the International Covenant on Economic, Social, and Cultural Rights (ICESCR) (UNDP, 2006; UNDP, 1999).

Additionally, the ICESCR inferred the right to physical and psychological health to be comprehensive of the determinants of good health such as access to sufficient potable water (UNDP, 2006; UNDP, 1999). Nevertheless, the weight that is embedded in these declarations is not substantial enough, given that every 3 in 10 people do not have access to potable water and as a result, an average 2; 1 billion people still lack access to potable water, years after the ratification of these declarations (JMP, 2017). Contained in the Universal Declaration of Human Rights of 1948 are the human rights to food, an adequate standard of living, life and health,

whose realization all requires access to potable water. Simply put, lack of access to potable water has adverse implications on physical and psychological health, women's rights, infant and maternal mortality such that the (JMP, 2017) cites that, "the water crisis is a health crisis". In highlighting the essence of the inalienable right to water (OECD, 2006; OECD, 2017) accentuates the centrality of the human right to water and its realization of other human rights as explained below:

- The right to food

The human right to food is directly tied to the human right to water because lack of access to potable water undermines the efforts of basic food preparation and thereby nullifying the human right to food.

- The right to life and health

The human rights to life and health are also tied to the human right to water because lack of quality potable water is a major factor in the causes of infant mortality rate in developing nations. Hence, access to potable water creates leeway for better health and sustained livelihoods.

- The right to education for all

Essentially, the right to education for all cannot be realized in the absence of potable water ideally because in cases where there is lack of access to potable water, the adverse effects have a major effect on girls whose task is to fetch water and they are ultimately absent from school. Likewise, lack of adequate potable water in schooling structures also has adverse effects on the school children, particularly the girl-child who is more exposed when there is the absence of acceptable sanitation amenities in schools.

- The right to security

The right to security of an individual is a key factor in ensuring the realization of the human right to water in cases, where there is the absence of potable water women and girls become vulnerable because they have to walk long distances to fetch water.

Kumpel and Nelson (2016) uphold that Sustainable Development Goals (SDG's) also underscore on the overlapping of the right to potable water access on other rights by noting that, SDG 1 "to end poverty in all its forms everywhere" and SDG 4 "to ensure inclusive and equitable quality education and promote lifelong learning

opportunities for all” can only be realized through a causative of information on basic water, sanitation and hygiene for these:

- SDG target 1.4: “By 2030, ensure that all men and women, particularly the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services” (JMP, 2017).
- SDG target 4.a: “Provide safe, non-violent, inclusive and effective learning environments for all by building and upgrading education facilities that are a child, disability and gender-sensitive” (JMP, 2017).

2.6.1 The Human Right Based Approach to Water: Clarifying the Misconceptions

The human rights-based approach to water does not only set the rights to which citizens are entitled to, but they also indicate the responsibilities to which the citizens are accountable to (Majuru et al., 2016; Kumpel and Nelson, 2016). Hence, this is where the need to clarify the misconceptions arises because citizens only view their entitlement to the human right to water and become oblivious of their role as responsible agents in the realization of human rights as highlighted below.

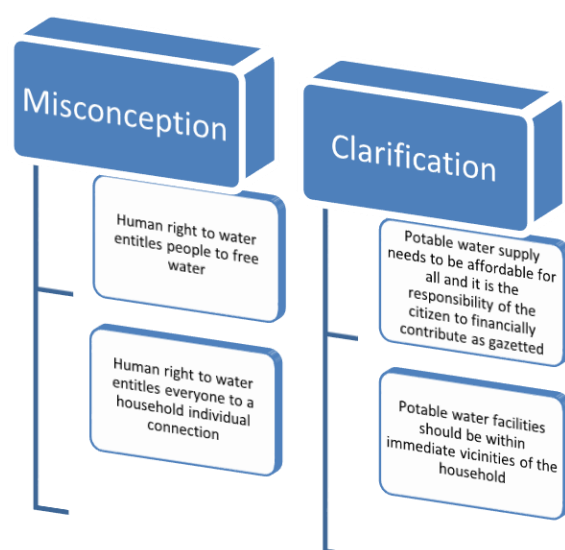


Figure 5 Misconceptions and Clarifications of the HRBA

Source: Adapted from (UN Human Development Report, 2006)

2.6.2 Citizen's rights and responsibilities

It is against this background that the Crisis in Zimbabwe Coalition (2010); Dreeze (2004) also argue that the human right to water comprises of both rights and responsibilities. This simply implies that the human right to water has a direct connection with the actions of a responsible or irresponsible citizen. Due to the impact of pressure groups and various international bodies on the human right to water, citizens have continuously developed a subjective sense of entitlement in ignoring their responsibilities in ensuring the fulfillment of the right to water (Machingauta, 2010; Gambe, 2013; Dugard, 2010). Thus, if the Harare City council decides to implement prepaid water meters, it is the role of a responsible citizen to pay the taxes and stipulated fees for amenities. Amongst other things, Matsinhe, Juizo & Persson (2014)

explain that, it is also the right of a citizen to be exempted from non-disconnection to potable water supply; similarly, this should not be mistaken to mean citizens will be exempted from payment as highlighted by the figure below.

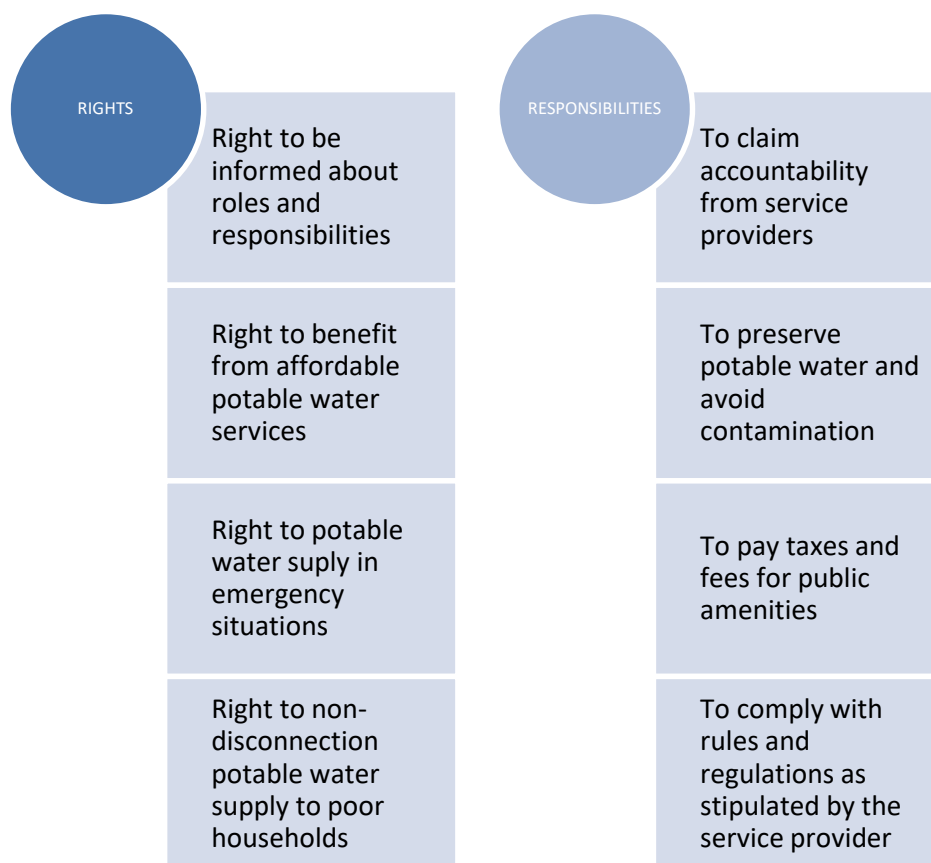


Figure 6 Citizen's rights and responsibilities

Source (Matsinhe, Juizo & Persson, 2014)

Consequently, the citizen is also entitled to benefit from affordable potable water services as well as access to potable water supply in emergency situations. In retrospect, the citizen also has the responsibility of preserving potable water as a resource by avoiding contamination and wastage at all times. Matsinhe et al., (2014) highlights that the human right to water is also tied to the responsibility of the citizens to comply with the rules and regulations as they are stipulated by the service provider, although this might seem irrational in the case of prepaid water implementation without adequate public consultation. This study concedes that the fine lines that align the buffer zone between the rights and responsibilities of citizens in respect of the human right to water have to be well represented to avoid any unnecessary discrepancies. Therefore, an emphasis on the rights of citizens in ignorance to the responsibilities will always inevitably lead to unwarranted expectations from citizens as relevant in the case of Zimbabwe with prepaid water meter implementation. Furthermore, Mudzingwa (2015) also stresses that citizens

have a right to be informed about their rights and responsibilities such that they can be able to make well-informed decisions in advising public policies as relevant stakeholders to the policy-making cycle.

Similarly, the human right to water grants every citizen, human rights institutions and NGO's the authority to monitor the implementation of the right to water and hold the State accountable for failure to realize this right (Graham, Hirai & Kim, 2016). However, Coutinho (2010) notes that the government as the service provider cannot be held responsible for negating the right to water if it is not in a financial position to do so. Nevertheless, Mudzingwa (2015); Chatiza (2016) argue that it is the responsibility of the government to take every step necessary to ensure the adoption of appropriate alternative strategies in maintaining the human right to water. Likewise, the government is responsible for providing acceptable regulatory frameworks by implementing operative governance which ensures the application of the human right to water (Machingauta, 2010). As a result, Howsam (1996); OECD (2017) maintain that the responsible government can be held ultimately accountable by the citizens and every relevant stakeholder if it fails to realize the human right to water for all.

2.7 FROM MDG'S TO SDG'S ON THE HUMAN RIGHT TO POTABLE WATER

The cumulative realization by the global village to securing access to potable water supply within a human rights context also ushered in support from governments through the MDG's (Harvey, 2005). The United Nations human rights system is principal in the regulation and evaluation of States that are ratified to the MDG's (2015) and now the SDG's (post-2015) to ensure the fulfillment of the human right to water. This study acknowledges that Zimbabwe is a signatory of the MDG's which have since transitioned into the post-2015 development agenda. Furthermore, Zimbabwe and other 193 countries vowed to ensure the human right to water is recognized for all (Mudzingwa, 2015; JMP, 2017). Despite, these ratifications most developing nations, with the inclusion of Zimbabwe still face the challenge of ensuring access to potable water for the citizens, given the fact that most developing nations failed to meet their targets to achieving the MDG's and now have the mandate to achieve the SDG's target (Matabvu, 2016; OEDCD, 2017). Therefore,

this study highlights that Zimbabwe and the relevant stakeholders should take every necessary step in ensuring that the SDG's goals are realized in ensuring access to potable water for all. As aforementioned, in concrete terms, it is the role and responsibility of the government to implement the required legislative frameworks which safeguard the human right to water in adequate proportions (Coutinho, 2010; Machingauta, 2010).

2.7.1 Millennium Development Goals (MDG'S)

Galaiti et al., (2016) confirm that 189 heads of states ratified the United Nations MDG's in 2000, by committing to achieve eight various goals by 2015. Thus, the MDG's set the precedence for the SDG's on benchmarking of the realization of access to potable water for all on an international platform (UNDP, 2015). MDG's were essentially buttressed by the international human rights law; hence they were viewed as an assimilation of the international human rights framework (WWAP/UNESCO, 2006). The aim of target ten of the MDG's was to "Halve by 2015 the proportion of people without sustainable access to safe drinking water" (UN Millennium Project, 2005). Therefore, the interdependent and mutually reinforcing relationship between the human right to water and the MDG's becomes quite apparent, since MDG's recognized the need to improve access to potable water for all by 2015. Immediately, the nexus between MDG's and the human rights in the progression of attaining and ensuring access to potable water becomes evident. MDG 7c was a significant nodule of the MDG's because the fulfillment of the other MDG's was strongly tied to the accessibility and obtainability of potable water for all (Lupick, 2014; Kostyla, Bain, Cronk & Bartram, 2015). Thus, with the ushering in of prepaid water meters, the Harare City Council has to enable the sustainable accessibility of potable water because of the impact it has on humanity, in the lack thereof. As a result, Kujinga, Vanderpost, Mmopelwa, and Wolski (2014) also affirm that "sustainable accessibility takes into account the requirement that water should be affordable for all to ensure that no one is denied the basic human right to water".

2.7.2 Sustainable Development Goals (SDG'S)

Failure by most developing nations to achieve the targets of the MDG's by 2015 marked their extinction which ushered in the SDG's hence they are also commonly referred to as the post-2015 development agenda. The targets of the MDG's as the millennium development agenda was to "halve the proportion of the world's population without sustainable access to safe drinking-water", (JMP, 2017). Majuru, et al., (2016) acknowledge that, with the succession of the post-2015 development agenda, more importance has been placed on conforming to the human rights criteria in lieu of potable water being sufficient, available, accessible, acceptable and affordable for all. Furthermore, Smiley (2016) avows that, the aim of SDG's as compared to MDG's is to increase the reporting procedures for the set targets to warrant much more extensive accountability from member states in the realization of the human right to water. This has also been facilitated by improving the resolution of the information that is used in following the progression towards accomplishing the SDG's (Mtangabende & Shava, 2016).

Goal six of the SDG's of the post-2015 development agenda posit that "developing and developed countries should ensure the availability and sustainable management of water and sanitation for all by 2030" (WHO, 2015). Goal six of the SDG's further emphasizes that "all developing nations must achieve universal and equitable access to safe and affordable drinking water for all by 2030" (WHO, 2015). This explicitly implies that potable water is indispensable for human life, hence ensuring that the discussions of the right to potable water must be done in the appropriate theoretical context is essential (Ward, 1996; Gleick, 1998). Specifically, SDG target 6.1 aims to "achieve universal and equitable access to safe and affordable drinking water for all by 2030 and the indicators on water quality, reliability, collection time and affordability will need to be measured and attained by 2030" (Mtangabende & Shava, 2016). The argument is that progress to some of the indicators cannot necessarily be instantly evaluated, but then it will be a medium to a long-term process which will be enabled through reliable real-time data by 2030 (JMP, 2017; Chatiza, 2016). This study argues that prepaid water meter implementation in Zimbabwe will inhibit the progress of realizing the SDG's towards access to potable

water especially for low-income households if the implementation is not properly handled, by devising alternative coping mechanisms.

Hence, the SDG's affirm that the right to use potable water is actually a legal right, not a service delivered as a commodity in a capitalistic world (Smiley, 2016; JMP, 2017; OECD, 2017). Therefore, Coutinho (2010) stresses that it becomes a compulsion on the State and relevant stakeholders to ensure the realization and fulfillment of improving the provision of potable water access to humankind. Goal 6 of the SDG's can thus be realized by also incorporating the public into the policymaking structures, specifically with regards to the implementation of water provision tools so that they are participatory as active not passive citizens (Majuru et al., 2016). This study upholds that, since achieving the human right to water is so imperative, the public service provider should enable substantial advancement towards achieving that right and the Harare City Council should recognize the effect prepaid water meters will have on potable water accessibility.

2.8 WHAT IS A SYSTEM?

Miller (2007) states that a system is a collection of independent but interconnected components organized in a meaningful manner in the bid to accomplish an overall goal. Sousa and Voss (2006) also confirm that a system exists to interact, produce, consume and exchange an array of goods and services. This study acknowledges that a system enables the clarification in understanding the Harare City Council as a meta-system of interspersed components which all form part of a larger system. This implies that the elements of a system have a significant effect on each other such that if one element is removed it heavily transforms the entire system.

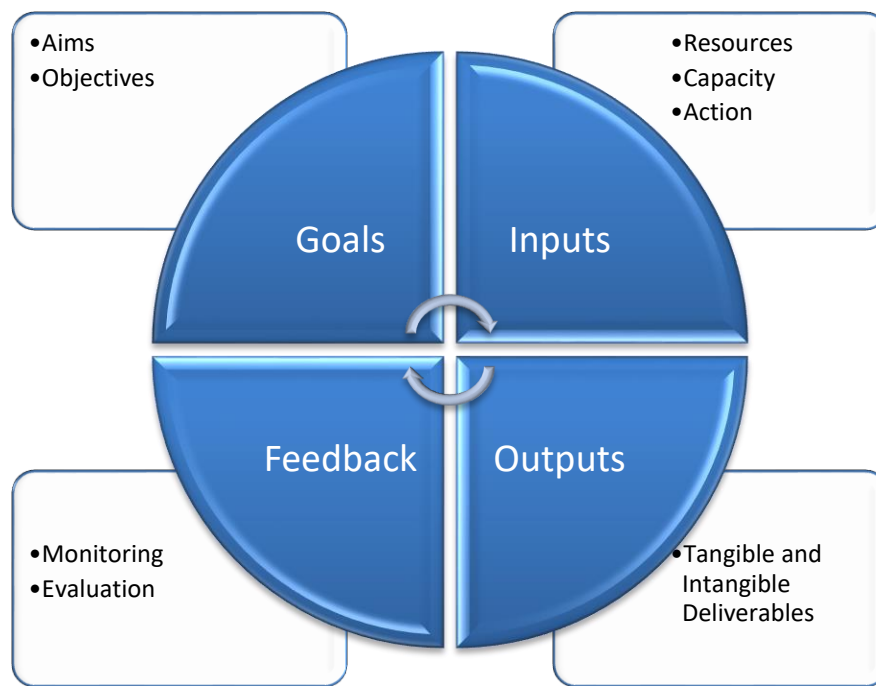


Figure 7 A system

Source: Own Illustration (2017)

2.9 WHAT ARE SERVICES?

The UN-Habitat (2009) defines a service to be any tangible or intangible good that is produced and delivered to ensure the progression of sustainable livelihoods for socio-economic development. Vásquez and Espallat (2016) note that services exist within a continuum of requirements which are key elements in ensuring the establishment and consistent production and delivery of the tangible or intangible goods. This simply implies that continuity of the service provision cycle is heavily reliant upon the availability of a certain set of inputs which vary with the type of service, from financial, technical and public participation amongst others. Furthermore, WB (2016); Zhou (2013); Chirisa (2013) emphasize that the delivery of certain services is also essential in guaranteeing a certain standard of living. This implies that to ensure the realization of certain human rights, the provision of basic potable water services is imperative.

Likewise, from a Public Administration perspective, some services are conferred to as basic services simply because they are fundamental in ensuring the advancement and progression of socio-economic development for humankind (Cloete, 1994; Zhou,

2012). For instance, basic services include health, water and sanitation, public safety and human security amongst others. Equally speaking, access to most of these basic services is deemed to be an entitlement to human rights by the global village from an international human rights perspective (UN-Habitat, 2009). Hence the alignment of the systems theory to service delivery and the HRBA to water in this study so as to gain a deeper insight into the efficacy of prepaid water meter implementation without negating the human right to water, whilst maintaining continuity of the service provision cycle.

2.10 CONCEPTUALISING THE PRINCIPLES OF SERVICE DELIVERY

Public service provision in most developing nations is fundamentally controlled by the State. However, Nhede (2012); Martin (2012) note that the advent of New Public Management has ushered in the persistent increase in the adoption of alternative service delivery approaches through privatization and mixed models of service provision. This is an indication that the role of both the State and non-state actors is slowly becoming apparent in the service provision cycle globally. Vásquez & Espallat (2016) notes how the success of the service provision cycle is dependent upon the effortless assimilation of all the singular sets within the comprehensive system. Furthermore, Sousa & Voss (2006); Vásquez & Espallat (2016) acknowledge how the service provision cycle is a system which essentially encompasses a set of parts such as goal setting, taking necessary action to achieve the goals through implementation and making sure there is constant feedback from the public.

Hence, this study is arguing on the efficacy of the prepaid water meters in Harare because there is a misalignment of the crucial inputs, particularly financial and technical capacity and public participation, within the service delivery cycle. Zhou (2012); Zhou (2013) espouse that failure to meet the needs of the public in ensuring socio-economic development can be deemed as a failure of the service provider to ensure effective and efficient service provision. Thus, it becomes essential that the public sector as the service provider ensures the alignment of all the components within the system prior to implementing a service provision tool. Correspondingly, UN-Habitat (2009) maintain that the public service provider should essentially be

guided by some of the service delivery principles graphically presented below in ensuring effective and efficient public service provision:



Figure 8 Principles of Service Delivery

Source: Own Illustration (2017)

2.11 FIVE ENABLERS OF SERVICE DELIVERY

Martin (2012); Phillips (2004) underscore that service delivery essentially requires certain enablers when developing customer-oriented service provision tools by enabling public participation and comprehensive public consultation to gain a holistic understanding of the needs and wants of the public. Hence, as a result of this comprehension, the complexity theory will be discussed in this chapter because it also sheds more discernment with regards to the behavior of stakeholders within a complex system. This section of the chapter discusses the 5 key enablers of service provision which are:

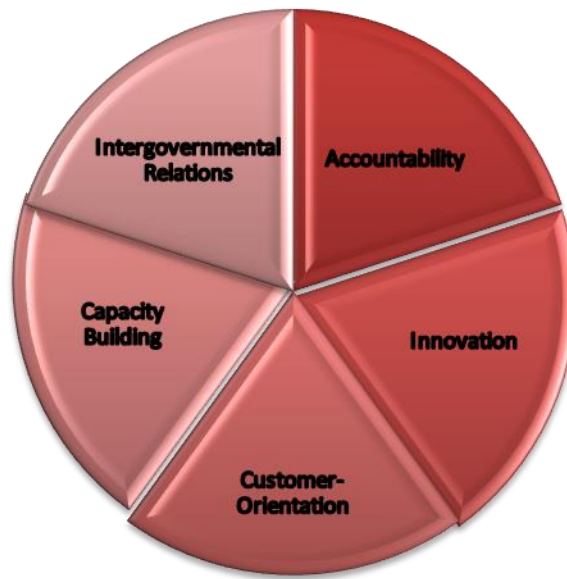


Figure 9 Enablers of service delivery

Source: Own Illustration (2017)

2.11.1 Intergovernmental Relations

Independent and interdependent tiered structures are predominant in public and private sectors and each of the tiers is responsible for a certain allocated commitment. As a result, within the public sector, there is a national, provincial and local sphere of government (Zhou, 2013; Cloete, 1994). To ensure effective and efficient public service provision, there should be a synchronized course of goals, inputs, outputs, and flow of feedback within these tiered structures. Ackerman (2004); Peters (1998) confirm that this synchronization can be facilitated through the formation of visible governance at each tier and the ability to set common goals based on the needs of the public and being customer-oriented as a whole system.

2.11.2 Customer-Orientation

Public service provision operates within a continuum in which the public is normally regarded to as the key beneficiaries. This essentially implies that public service has to be customer-oriented, which can be deemed to be a mammoth task because the public service operates on limited resources against unlimited needs and wants of the public (Platteau & Abraham, 2002; Cloete, 1994). The success of public service

is also reliant upon adequately addressing the needs of the citizens as the customers (Nhede, 2012; Machingauta, 2010). This simply means taking into account the low-income households and their exclusive characteristics given the implementation of prepaid water meters. This study acknowledges that customer-orientation involves implementing the prepaid water meters to sufficiently address a societal problem not to create another societal problem. Equally, this study does not suggest that potable water services should be delivered for free but argues that a careful appreciation of the cost and benefit analysis of prepaid water meters should be undertaken in ensuring their efficacy. It is also imperative to note that public service does not exist in a vacuum and there should be the integration of the public's needs and responsibilities to ensure enhanced service delivery (Mashayamombe & Hofisi, 2016; Nhede, 2012). This integration can only be made possible through aligning the set service standards to the in-depth knowledge of the customers' needs in providing the groundwork for the formation of suitable and appropriate service provision tools. Additionally, in public service, the needs of the public should be the catalyst that warrants the progression of public service delivery (Martin, 2012; Phillips, 2004).

2.11.3 Accountability

Cloete (1994) confirms that public service accountability entails delivering the quality of service as per set standards that were promised to the public upon consultation. Martin (2012); Peters (1998) further denote that accountability is directly tied to transparency because the service provider has to be transparent in acknowledging to the public when there is a failure to deliver the quality of the promised set standard. The initial phase in ensuring accountability in service delivery is defining the role of each tier of government and the office-bearers thereof (Ackerman, 2004; Peters, 1998). This is where intergovernmental relationships become significant because each tier has to have its distinct roles and responsibility which are publicly known. Resultantly, it is the right of the public to hold public office-bearers accountable when they fail to deliver (UN-Habitat, 2009). Thus, it is the role of the latter to ensure the quality, affordability, and accessibility of potable water supply to the public is ensured within the prepaid water meter implementation predicament (Dooley & Van de Ven, 1999).

2.11.4 Innovation

OECD (2017) confirms that the advent of the 21st century ushered in the realization of the role of technology as an enabler to accomplishing aims and objectives within the public sector. Resultantly, Lewis and Moultrie (2005); Borins (2000) espouse that innovation is a necessary catalyst that sustains continuity in the transformation and restructuring of the public service. Hence, there has been an urgent need to gradually incorporate the role of innovation in some sectors of public service in adopting alternative approaches to service delivery (Damanpour & Wischnevsky, 2006). The abrupt inception of innovation in some sectors has received hostility from both the public and some public office-bearers because of the implication that innovation is directly tied to privatization and anti-poor approaches (OECD, 2017). This perception is a partial contributor of the causal-effect of the spirited-resistance the Harare residents pending the implementation of prepaid water meters. The misconception is that innovation gives lee-way for privatization which the residents argue to be inappropriate for potable water supply because of its inalienable nature (Damanpour & Wischnevsky, 2006; OXFAM, 2011; WB, 2016). Bearing this in mind, the public service needs to apply innovative practices to government tiers and departments that have proved the need, preferably based on what has worked for other developing nations within the same frame (OECD. 2017).

2.11.5 Capacity Building

Wessels (2011); Phillips (2004) note that, the public service does not operate in a vacuum, as a result, it operates within a variety of dynamic factors which are constantly revolving, such that the public sector has to keep up with the trend through capacity building. This also involves engaging in a multi-dimensional approach to transforming the image of the public sector, even from the manner in which the office-bearers think, act and interact with the public (Machingauta, 2010). Consequentially, capacity building in the public sector can be integrated through strategy reformation, empowerment of leadership accountability, citizen-oriented organizational design, training and development and innovative organizational culture (WB, 2016). This study acknowledges that incorporating capacity building as a key enabler to public service will ensure that the office-bearers are responsive to

the needs of the public which in retrospect is central to the efficiency and effectiveness of potable water provision.

2.12 SYSTEMS THEORY TO SERVICE DELIVERY

The systems theory is ascribed to the biologist Bertalanffy who suggested the general systems theory in the early twentieth century (Bertalanffy, 1969). In comprehending the root of his idea Bertalanffy suggested that “the fundamental character of the living thing is its organization and the customary investigation of the single parts and processes cannot provide a complete explanation of the vital phenomena (Bertalanffy, 1972). The general systems theory also suggested that a system was an end product of interrelated components within a much bigger environment. This can be easily translated to indicate that the components of a system do not exist in a vacuum, but they however co-exist and their co-existence is substantial to the success of the system. Furthermore, Bertalanffy (1972) articulated that the components, inputs, and structure of a system are active and ever-changing such that all the relevant stakeholders should take steps necessary to be in alignment.

Thus, this study confirms that prepaid water meter implementation is more than just a policy stratagem but the ultimate summation and appreciation of the relationship between all the individual components involved in this system. Niklas, 2013 maintains that a system can either be open or closed and as a result, an open system allows for continuous feedback as compared to closed systems which are static with no room for any exchange of information. Bertalanffy (1969) articulates that the relationships within open systems have a certain level of “equifinality” in which the components of the systems have stability. Simply put, the “equifinality” represents the on-going nature of an open system such that decision making is all-encompassing of all the relevant stakeholders and open systems are not susceptible to imminent deaths (Gouillart and Sturdivant, 2004; Bertalanffy, 1972).

The fundamentals of the systems theory avow that, “there exist, models, principles, and laws that apply to generalized systems or their subclasses, irrespective of their particular kind, the nature of their component elements, and the relationships or

‘forces’ between them” (Bertalanffy, 1969). Thus, in this view, the Harare City Council is a prototype of a system that can be embraced in this study. It is essential to comprehend the Harare City Council as a system in this research since I identified it as a system which has various inputs that are processed to produce outputs (Porter-O’Grady, Hawkins and Parker, 1997). The accomplishment of goals by the system is mainly dependent upon the continuous feedback between the different components of the system (Niklas, 2013). This continuous feedback within the system is maintained through policy implementation and constant monitoring and evaluation of the projected policies and procedures (Miller, 2007). As part of the continuous feedback, the Harare City Council should ensure that the expected service outcome is accordingly received by the citizens through the implementation of the prepaid water meters. Thus, Roth and Menor (2003) affirm that understanding the needs and expectations of citizens is a focal factor of service delivery efficiency and this is enabled through public participation and consultative forums with relevant stakeholders in a system.

Porter-O’Grady, Hawkins, and Parker (1997) sustain that, the predominant purpose of the systems theory to service delivery is to ensure that the service implemented sufficiently matches and better yet exceeds the customer expectations. A good system should, therefore, ensure that both the service outcome and the process of service delivery are perceived as being of good quality by the customers. Thus, Gouillart and Sturdivant (2004) espouse that in a system, service delivery processes should fundamentally involve more customer contact and customer participation. In recollection, service delivery systems should incorporate integrated designs which ensure adequate coordination and synchronization between all the elements within the service delivery system (Niklas, 2013). The purpose of ensuring coordination and synchronization is to enable policies that promote the delivery of high-quality services, whilst still maintaining the efficiency of the system (Johnston & Clark 2005).

Hence, the manner in which residents access and utilize potable water is only dependent upon their integration with the Harare City Council as a segment of the system responsible for water provision. Notwithstanding civil organizations like the Combined Harare Residents Association (CHRA) which are the springboards and essential catalysts between Harare residents and the Harare City Council authorities

(Mudzingwa, 2015). The theory thus gives direct insight into this study by considering every stakeholder involved in the service provision and utilization system of potable water in Harare as an ultimate open system, pending the implementation of prepaid water meters.

2.13 A SYNOPSIS OF THE THEORETICAL FRAMEWORKS

Public service provision in Zimbabwe can be viewed from a three-tier vantage point, by involving the national government, the local government and the citizens as the public service recipients (Machingauta, 2010; Nhede, 2012; Zhou, 2013). The unfortunate dilemma within the Harare City Council ecosystem is that the recipients of the public service (citizens) who are also the ratepayers have been marginalized in a system which has deemed them, passive actors (Chaminuka and Nyatsanza, 2013). This is against the background that the citizens are citing lack of public participation and consultation from the Harare City Council, which are key factors in public service provisions. Resultantly, Matabvu (2016) confirms how the absence of public consultation before prepaid water meter inception has led to strong-willed resistance from the residents who are contesting the implementation because of various reasons amongst which are:

- Financial capacity
- Human rights to water
- Lack of public participation
- Maladministration
- Privatization
- Technical capacity

Thus, bearing in mind that Harare City Council is a system, this implies that its stability and continuity is heavily reliant upon most of those above-outlined inputs as key factors in the successful implementation of prepaid water meters. For instance, from a financial perspective, bearing in mind the socio-economic status of Zimbabwe the average price of a prepaid water meter per household ranges between US\$200-US\$350 (Mudzingwa, 2015). Hence, this study acknowledges the issue of affordability, being cognizant of how the Harare City Council will ensure affordability

for the public and for itself as the service provider. Unfortunately, as with the case of prepaid electricity meters, the same principle of cost-recovery will probably apply and a certain amount of money will be deducted when purchasing credits (Matabvu, 2015). This implies that residents will bear the brunt of prepaid water implementation since they are at the receiving end, thereby negating their human right to accessing potable water. Likewise, this is one of the reasons why residents are refuting prepaid water meter implementation and this study revealed that the public intends to default on paying for water utilities and the service provider will ultimately succumb to deflated revenue. It is against this background that Mudzingwa (2015) asserts that to ensure the human right to water is realized whilst ensuring sustainability within the service provision ecosystem, the following questions should be answered:

- “Were there enough public consultations on the policy and if so what were the positions of different stakeholders on the issue?”
- How will health standards be maintained especially in a nation with a history of cholera outbreak?
- What measures have been put in place to curb such disasters?
- What is the role of the resident besides paying for water, in these partnerships?
- What happens to the economically disadvantaged groups of our society who cannot even afford a decent meal three times a day?
- Do they go without water because they simply do not have money on them?”

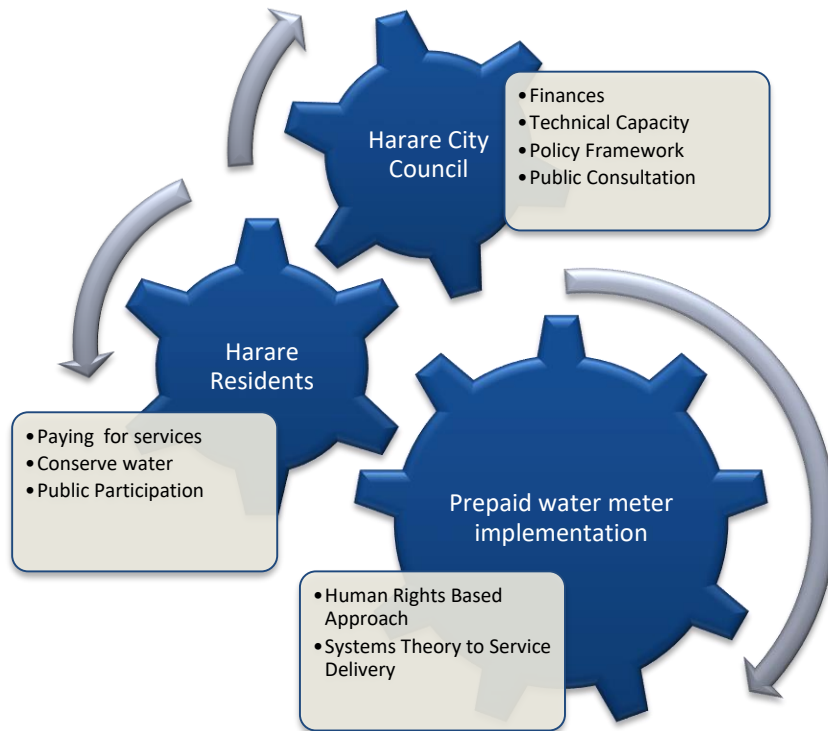


Figure 10 Methodical Diagram of the Harare City Council

Source: Own Illustration (2017)

2.14 THE “COMPLEXITY THEORY”

This study also applied the complexity theory in ultimately comprehending the efficacy of prepaid water meters from a comprehensive public management lenses. The aim of the author in applying the complexity theory was to bring configuration to the human rights-based approach and the systems theory to service delivery. Sanderson (2000) avows that, the complexity theory places its emphasis on the occurrence of the dynamics prevalent within a system, by examining the diverse occurrences that evolve around policymaking, decision-making, and organizational structures. Scholars have varied definitions that underscore the complexity theory which ranges from complex systems being defined as intricate versions of simple systems to complex systems also being defined as being dissimilar from simple systems (Sanderson, 2000; Byrne, 1998; Luhmann, 1986).

However, despite the varying definitions, Pressman and Wildavsky (1973) affirm that the core of the complexity theory revolves around the evolving causal relationships

over time from place to place in the most unanticipated way. In the same manner, the human rights-based approach provides more intuition on the entitlement of the public while the systems theory to service delivery provides more intuition on the entitlements of the service provider. Resultantly, this study discusses the complexity theory since it focuses on balancing the discrepancies between the overlaps of the two aforementioned theories and strikes a balance. The selection of the complexity theory was based on its ability to offer a scrutiny into the transformation of the well-established generic view of the citizens as the recipients and the service provider as the dominant participant in the public service ecosystem (Blackman & Atkinson, 1997).

Byrne (1998) maintains that “complex management” focuses on the “whole systems” approach by including the broader systematic setting so that the performance of a system is not just viewed from an organizational perspective. Hence, Sanderson (2000) notes that the efficacy of complex systems in public service provision lies in its capacity to offer an unrestrained objective dimension in monitoring all the agents in the system rather than imposing a one-dimensional aspect of the agents. Thus, the complexity theory will benefit this study by refining the comprehension of the finer dynamics that underlie public management and governance processes. The complexity theory stimulates a paradigm shift by framing the system and its stakeholders within a new “landscape” by remodeling the old system (Cilliers, 1998; Morel & Ramanujam, 1999). Consequentially, the Crisis in Zimbabwe Coalition (2010) affirms that the human right to water should be passable for human-kind by remarking that, “water supply is characterized by the presence of significant externalities which recognize the financial responsibilities of the residents”. This loosely translates to mean that, the efficacy of the prepaid water meters is also dependent upon the financial responsibilities of the citizens amidst the predominant continuum of human rights. Pending prepaid water meter implementation, this study also cites a contention of factors revolving around the financial and technical capacity of the service provider, in ensuring effective and efficient potable water supply for all. As a result, the efficacy of prepaid water meters has to be comprehended through a multi-dimensional proposition because water is non-substitutable and it has no alternatives such that the potable water supply framework needs enunciation.

In essence, Teisman and Klijn (2008) espouse that, the complexity theory fundamentally tenders the prominence of systematic contexts by underscoring on the dynamics of the agents and external pressures under which a system exists to be crucial. Conversely, from a complex theory perspective, the peripheral densities from which the public service exists incessantly vary based on the behavior of the relevant stakeholders of any system (Blackman & Atkinson, 1997). This implies that the complexity theory concedes the behavior of stakeholders within complex dynamics as self-organizing. Within a normal system, the stakeholders develop a sense of self-organization by forming a perception of what they want and how to behave within the system they are in. Unfortunately, this results in a self-referential attitude in which one stakeholder denies the entitlements of another stakeholder such that the public service provider is solely focused on coercing the public to pay for services, whilst the public is solely focused on their human right to water. This study notes that both parties are being oblivious to the varying dynamics underlying the efficacy of prepaid water implementation as relevant stakeholders of the system. This is because from a service delivery perspective the public sector is more inclined to focus on their ambitions and capacity to make a difference and they tend to overestimate their capacities in providing a certain service.

In retrospect from a human rights perspective, citizens are inclined to the entitlement of services while being heedless of the element of the financial aspects involved in the service provision cycle. Consequentially, the complexity theory emphasizes that despite the system containing a relatively unstable set of characteristics, the dynamics of the stakeholders and context of the system are essential factors to note (Teisman & Klijn, 2008; Morel & Ramanujam, 1999). There ultimately has to be a definitive balance in between the complex interaction of these stakeholders. In the same light, the successful implementation of prepaid water meters will only depend on the ability of both parties in adjusting to the external factors that are prone to rise within the potable water supply system. In principle, the Harare City Council has to employ an evolutionary approach which enables representative and decentralized problem-resolving through comprehensive consultation forums and public participation to allow the needs of both parties to be amicably addressed in the continuum of prepaid water implementation. Thus, the ultimate aim of the complexity

theory is to proffer an unconventional line of thought, yet still identifying the significance of every stakeholder for continuous feedback of a system (Pressman & Wildavsky, 1973).

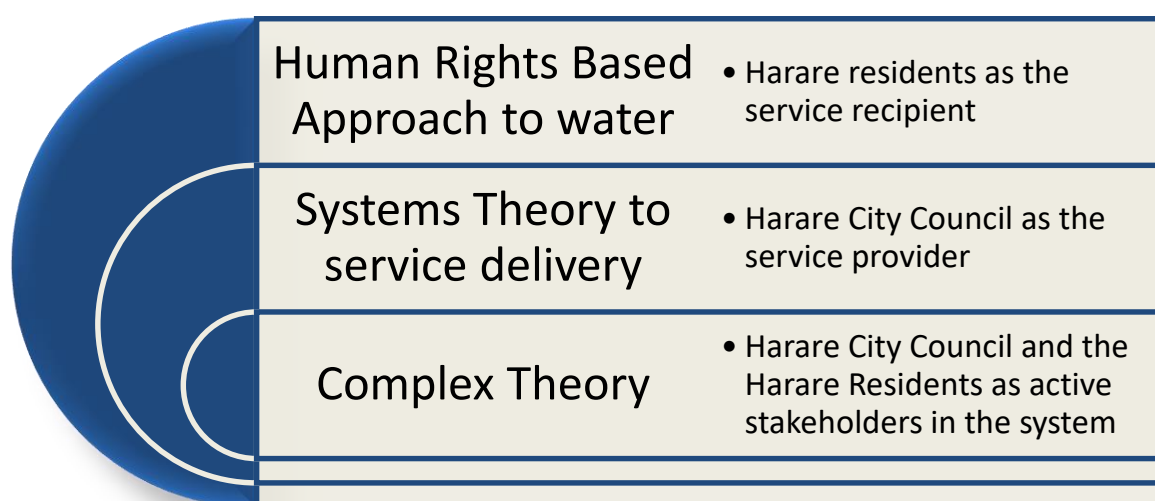


Figure 11 Consolidation of the theoretical frameworks

Source: Own Illustration (2017)

2.15 CONCLUSION

In essence, there are various public service delivery tools that can be harnessed in ensuring effective and efficient public service provision and prepaid water meters are an example amongst the many. However, despite the abundance of these variant service provision tools, access, availability, affordability, and quality of potable water supply have remained a predicament for the public service provider. With the public service being the major driver of service provision in developing nations, the visibility of gaps in access to affordable potable water services is still predominant in Zimbabwe. Consequentially, provision of potable water supply is certainly under continuous threat in Zimbabwe, given the failure to achieve the service related MDG's and the seemingly slow progress to achieving the service related MDG's.

As a pointer, lack of access to potable water prior and post prepaid water meter implementation would be an indicator of the inept nature of the public service in Harare. These inept characteristics are directly tied to lack of technical and financial capacity, lack of transparency and accountability, lack of public consultation and participation of the relevant stakeholders. As a result, this study was grounded in the systems theory to service delivery and the HRBA to water, since prepaid water meter implementation orbits around every stakeholder involved in the potable water supply system as an inalienable human right. These, theories aligned together, accentuate the rights and responsibilities of both parties in ensuring improved access to potable water supply within the appropriate framework. This study ultimately, employed the complexity theory to focus on the assimilation of the systematic organization of the Harare City Council, by taking into perspective the externalities underlying public policy making and harnessing a multidimensional approach.

This study asserts on the apparent rift that still exists between the principles and practicalities of warranting how the aims and objectives of the public service are directly channeled within the human rights framework and vis-à-vis. Conversely, the study dissected the various reasons as to why there is a rift, amongst which are an entitlement and self-regarding by both the service provider and the public in retrospect. As a result, there is friction between both parties in comprehending their roles and responsibilities which go as far as deciphering the human rights framework and service delivery principles for the successful implementation of prepaid water meters and benefit of all. The study reveals that pending prepaid water implementation, the HRBA to water is certainly not a miracle stick because it does not provide a solid framework for potable water governance other than solidifying the inalienable right to water for all. Seemingly, the HRBA fails to address issues relating to non-payment of services by residents, who do not want to pay and those who do not afford to pay for services citing that potable water is their human and constitutional right (Vásquez & Espailat, 2016). The systems theory to service delivery is also not spared in this predicament because it is also not a miracle stick to potable water provision because it does not provide a solid framework which proves the efficacy of prepaid water meters (JMP, 2017). The systems theory fails to address issues relating to the technical and financial aspects of the service provider

related to prepaid water implementation as determinants of the success of the meters.

However, this study does not disregard these two theories because they are very indispensable to this study by grounding it in solid theory. Nonetheless, the complexity theory bridges the rift between these theories by giving this study the direction necessary on the practicalities that relate to the trade-offs that are prevalent in potable water provision as a complex system. Resultantly, the complexity theory advocates for structural change within the system bearing in mind the external factors that have the power to inhibit the core of a system. Likewise, the efficacy of prepaid water meters will only cultivate complete realization if the Harare City Council engages in a multi-stakeholder discourse, in making the citizens aware of their role while the former also becomes transparent for the stability of an appropriate water provision tool. This chapter reveals that while one theory could suffice to describe a phenomenon, using other theories was also necessary to explain the efficacy of prepaid water meters for potable water provision in the Harare City Council. Thus, prepaid water meters were theorized as being a “Human Rights issue” and as being a “service delivery issue” whose pre-eminence lies within a “complex system”. The purpose of the forthcoming chapter is to provide an in-depth discussion of how prepaid water meters can be theorized as a “Human Rights issue”, through the identification of the perceptions of the Harare residents regarding the effectiveness of prepaid water meters.

CHAPTER THREE

CITIZEN PERCEPTIONS OF THE EFFECTIVENESS OF PREPAID WATER METERS IN HARARE

3.1 INTRODUCTION AND BACKGROUND

This chapter highlights how prepaid water meters are strongly tied to the Human Rights Based Approach to water, by relating the theory to the perceptions of the Harare residents towards the effectiveness of prepaid water meters. The effectiveness of prepaid water meters is defined through a variety of platforms, hence, McDonald (2002); CHRA (2015); UNICEF (2016); UNDP (2015), posit that a prepaid water meter is a definitive cost retrieval tool which is able to execute the computation of water volume used and coerce users to pay for that exact amount. While, Swyngedouw (2006) Majuru et al., (2011); Chirenda et al., (2015); Chigumira and Mujere (2009) assert that prepaid water meters enable service providers to evade the costs aligned to non-payment and debt accrual because the meter water valve automatically shuts down when credit is exhausted. However, McDonald (2002); (Matabvu, 2016); further applaud prepaid water meters for being the most appropriate system that promotes payment of services to ensure efficient revenue collection as opposed to conventional water meters which deliver water on credit. Essentially this study addresses the extensive question of the efficacy of the prepaid water meters through the citizen's lenses by striking a balance between the Human rights-based approach and the systems theory in meeting the potable water needs of the Harare residents. This study espouses the diverging interpretations on the essence and effectiveness of prepaid water meters on households, with some citing that the tools do not effectively strike a balance between social parity and institutional sustainability (Mudzingwa, 2015; Gambe, 2013; JMP, 2017).

Harvey (2005); Marvin *et al.*, (1999) cite that prepaid water meters have no other exceptional merits over conventional water meters other than the presumptuous hopes of revenue accrual. Abu-Hilou and Jarrar (2012); Matabvu (2015); Berg and Mugisha, (2010) affirm that prepaid water metering transfers accountability to residents who are left at the expense of the metering system which can disconnect

them when they fail to recharge. However, this study maintains that if revenue accrual is the main objective for the Harare City Council, then its priority target should be the predominant users of water, such as major industries, government and commercial entities rather than domestic users who are yielding into the socio-economic crisis in Zimbabwe. Hence, it becomes imperative to understand these realities empirically and as a result, this section of the study questions why the Harare City Council would advance prepaid water meter implementation, which has already been forbidden in the United Kingdom, Palestine, India, and Namibia among other countries due to their adverse effects (Mapedza & Geheb, 2010; WHO, 2015; OFWAT, 1998; Abu-Hilou & Jarrar 2012). It is significant to note that the essence of this study is not to totally disregard prepaid water meters as being anti-poor or punitive, but however to acknowledge that their effectiveness can be fully exploited with adequate support and full understanding by the public as underpinned by the Human Rights Based Approach to water.

It becomes essential to note that in the course of assessing the effectiveness of prepaid water meters, a pro-poor outlook would strike an equitable balance. This is because Fact sheet number thirty-five of The United Nations establishes that the right to water has freedoms and entitlements (UNICEF, 2016; UN-Habitat, 2009). The freedoms include being free from capricious disconnections and entitlements necessitate access to a minimum amount of potable water (Swyngedouw, 2006). Additionally, Shepherd (2004); GOB (2012); Matabvu (2016) note that prepaid water metering has been increasingly gaining impulse in developed nations and the experiences in developing nations are not so plausible. Thus, the implementation of prepaid water meters in Harare without apt consultation from the public could be a limiting factor in fully enabling their effectiveness (Chirenda et al., 2015; Kayaga, 2008). Simultaneously, this study affirms that Harare residents will be involuntarily coerced to use the amount of water they can afford as opposed to their needs thus eroding the core of humanity due to affordability. Hence, the mandate of the study to enable a pathway on the effectiveness of prepaid water meters, from the citizen's lenses for potable water provision.

3.2 UNDERSTANDING THE MEANING OF PREPAID WATER METERS

This study understands that prepaid water metering is a system which ensures that users pay an amount of money that is precisely equivalent to the amount of water they will use. This means that prepaid water meters inhibit access to potable water services when a user exhausts their credit or prepaid balance, thereby limiting and denying potable water consumption. Thus, Mudzingwa (2015); Drakeford (1998); BMA (1994) echoed the sentiments that prepaid water meters are water controlling apparatuses which are powered by an expensive technology that is intentionally implemented to coerce payment for potable water services. Of principle to this study, is that the Zimbabwe Electricity Supply Authority Holdings (ZESA) begun rolling out prepaid electricity meters since 2011 to recoup lost revenue. In similar fashion, the Harare City Council has also been rolling out prepaid water meters since 2016 to recoup lost revenue incurred through non-payment of services by residents.

Gambe (2013) Berg and Mugisha (2010) define prepaid water meters as complex, automated and technologically driven devices which are constructed from different metal and plastic material which permit the discharge of potable water based on payment or non-payment as pictured below. Conversely, Mudzingwa (2015); Matabvu (2016) affirm that prepaid water meter implementation has been contentious in Zimbabwe even prior to its implementation with residents citing that the new tools are an impartial technology which is simply meant to benefit the service provider. It is against this background that this study argues that potable water can never be placed on an equal scale with electricity due to the human right to water and the various entitlements aligned. However, this does not imply that potable water should be merely distributed free of charge, what this means is that it should always be available as a rudimentary need, not a lucrative service.



Picture 1 Prepaid water meters in Harare

Source: Own Illustration (2017)

Zimbabwe's cataloging as a "failed state" is undeniable because the country ranks number 16 on the Global Foreign Policy's Failed States Index of 2016 after scoring 100.5 (Nhema & Zinyama 2016). Thus, classification of Zimbabwe as a "failed state" implies that a greater population of the Zimbabwean populace is surviving below the poverty datum line (Nhema & Zinyama, 2016; OECD, 2017) thus the sustainable provision of potable water should remain a crucial element. This is a factor to reflect on given the population of the Harare residents that is succumbing to great intensities of unemployment and poverty (Demographia World Urban, 2016). The current socio-economic status, therefore, poses complications for residents in pre-recharging the meters thereby limiting the effectiveness of these prepaid water meters whose main objective is revenue accrual. It is against this background that, Hove and Tirimboi (2011) Mapedza and Geheb (2010) acknowledge that the public service should use technology without permitting it to take control over humanity or socio-economic development. The aim of prepaid water meter implementation was to ensure cost recovery by the Harare City Council, but the approach has totally disregarded the public which was not adequately consulted on the effectiveness of the new devices (Musingafi & Chadamoyo, 2013).

This study emphasizes that the effectiveness of prepaid water meters lies in its economic practicality, operator responsiveness and its receptiveness by the public, all of which is absent in Zimbabwe. Hence, it becomes significant to note that prepaid water meters are not solely “magical sticks” that have the clout to address causative potable water challenges (Heymans, Eales & Franceys 2014; Oxfam. 2011.). This is because economic practicality is also a key factor in determining the effectiveness of prepaid water meters which are very costly, attracting a price range of US\$200–US\$350 per meter (Matabvu, 2016:4). The argument of this study is that the public is not simply fascinated by a new and pricey technology, but they are actually more concerned about the efficient delivery of potable water services which are affordable and reliable.

3.3 MERITS VERSUS DEMERITS OF PREPAID WATER METERS

This study posits that prepaid water meters create a pathway for an operative tool that coerces payment to ensure revenue accrual while relegating those who are unable to pay for accessing the service (Marvin *et al.*, 1999; Chaminuka & Nyatsanza, 2013). Gambe (2013) declares that problematizing the aforementioned dynamics is essential in understanding the effectiveness of prepaid water meters from both a human rights and service delivery perspective. Thus, in this light prepaid water meters have both significant advantages and disadvantages in several aspects and this can be attributed to the factors outlined below (Harvey, 2005; Xie, 2006; Huby, 2002).

3.3.1 Merits of Prepaid Water Meters:

- They facilitate effective budgeting by ensuring consumers enjoy accurate billing which promotes accountability and customers can resultantly prepay smaller amounts as opposed to unreasonable estimates from huge monthly bills.
- They also enable water resource management due to a stronger awareness of the burden to pay when credits exhaust.
- Prepaid water meters promote timely payment with customers evading additional fees associated with the late payment, disconnection, and reconnection.

- Hence, they ensure improved and sustainable revenue collection for the service provider due to the anticipated constant cash-flow, thereby loosening the burden of debt collection.
- They warrant timely consumption feedback and households receive judicious feedback on potable water enabling them to adjust their consumption accordingly.
- From a feminist perspective, prepaid water meters also have the potential to empower women towards time reduction in terms of time spent fetching water if the system warrants reliability in supply.

3.3.2 Demerits of Prepaid Water Meters:

This study confirms that prepaid water metering has its adequate share of merits as much as it has demerits and thus reflecting on that perspective is fundamental in ascertaining the efficacy of prepaid water meters. A major demerit of prepaid water meters is financially excluding the poor from enjoying their human right to potable water and further thrusting them into the depths of poverty due to failure to afford (Mangizvo & Kapungu, 2010; JMP, 2017). This results in the basic human right to potable water being equated to a privilege which can only be enjoyed by those who can afford, thereby negating the human right to potable water. Chirisa (2014) Chiri (2004) affirm that urban dwellers that are unable to access potable water normally opt for alternative unsustainable water sources which result in land degradation from dug up shallow backyard wells. Another direct causal-outcome of prepaid water meter implementation is the erosion of close-knit communal interrelations in urban communities, due to the awareness of punitive payment measures upon exhaustion of credit (Gambe, 2013).

However, it is unfortunate that a greater populace of the Harare residents has continuously survived on unsustainable potable water sources over the past decade and the implementation of prepaid water meters will not only lessen but worsen this predicament (Mtisi & Nicol, 2003; Nhapi, 2009). Consequently, striking a balance between the needs of the public and the systematic framework within which the Harare city council as a service provider works within is key, because (Sousa &

Voss, 2006) confirm that a system exists to interact, produce, consume and exchange an array of goods and services.

3.4 TRANSITIONING FROM NON-PAYMENT TO PREPAYMENT: A LIBERAL MOVE OR PUNITIVE MOVE

Kasrils (2001); UNDP (2013); OXFAM (2011) assert that the essence of potable water on humankind is significant such that its unavailability can result in the instability of life which can ultimately lead to death from water-borne diseases. Mapedza and Geheb (2010); Machingauta (2010) then assert that developing states have been yielding to service delivery fragmentation as inherited from past colonial rule which did not represent sustainable socio-economic service provision patterns. Likewise, most developing nations have been constantly failing to ensure access to effective potable water supply and Zimbabwe has unfortunately not been exempted from this crisis due to a plethora of dynamics (Chatiza, 2016; OECD, 2006; GOB, 2012; JMP, 2017; UNDP, 2006). The challenges to ensuring effective potable water supply have been so palpable such that goal six of the SDG's of the Post-2015 Agenda posits that "developing and developed countries should ensure the availability and sustainable management of water and sanitation for all by 2030" (WHO, 2015; JMP, 2017). Goal six of the SDG's further emphasizes that all developing nations must achieve universal and equitable access to safe and affordable drinking water for all by 2030.

This is a distinct reflection on the significance of potable water supply on the everyday lives of humankind. Similarly, Matabvu (2015) acknowledges that the "scourge" of capitalism has necessitated the implementation of prepaid water meters in Zimbabwe and it is clear-cut that low-income households will be the hardest hit by the socio-economic effects from this transition. In addition, the Harare City Council is assuming that residents have sustainable incomes and available money at their disposal (Mudzingwa, 2015), even when statistics reveal Zimbabwe ranks number 16 on the Global Foreign Policy's Failed States Index of 2016 with a score of 100.5 (Nhema & Zinyama 2016). Likewise, this study confirms how the Harare City Council is placing high hopes on revenue accrual and discounting the harsh socio-economic effects of prepaid water meters on the public, citing that they should resort to other self-sufficient ways (Nhema & Zinyama 2016). Hence, the argument of this study that

coercing low-income earners to prepay for potable water supply without any alternative source for them is explicitly harsh and irrational.

CHRA (2015) cites prepayment as a punitive technological move because the Harare City Council certainly recognizes the key reason for non-payment of services to be a disinclination to pay as opposed to the supposed lack or affordability by residents. Hence, this implies that the Harare City Council specifically implemented prepaid water meters to address the disinclination to pay for services by citizens, thereby disregarding its mandate to sustainably provide a fundamental need. It is in this context that, the Development Bank of Southern Africa (DBSA) executed a cautious approach on the efficacy of prepaid water meter implementation for developing nations (Dugard, 2010; WWAP/UNESCO, 2006). The DBSA clearly stipulates that “prepaid water metering should not be regarded as a panacea that will solve inefficient cost recovery and unsound water revenue management”.

The DBSA (2001) additionally specifies that customer acceptance of a service provision method or tool is an essential tandem of the public sector. The DBSA (2001) also augments that implementation of potable water supply projects should be consultative and participatory of the public with regards to the dynamics relating to service provision. Simultaneously, the International Water Association also supports consultation of the public by denoting that, “access to good, safe and reliable drinking water is one of the most basic needs of human societies such that it requires an integrated approach, close cooperation, and partnership between all stakeholders” (International Water Association, 2004). Thus Chikozho (2006); Kayaga (2008), affirm that warranting proper consultation with the citizens is essential when implementing public service provision tools due to their causal effect on the public. Finally, in light of Zimbabwe as a “failed state”, prepaid water meter implementation is not just about water commoditization, hence it was more instructive to analyze the efficacy of prepaid water meters from the insight of both the public and the local authorities in this study.

3.5 CITIZENRY CONFLICT WITH PREPAID WATER METERS

Chapter 4, Section 77a of the (Constitution of Zimbabwe, 2013) asserts that water is central to human life and dignity; while section 77b notes that every individual has the “right to safe, clean and potable water”. This study argues that prepaid water meter implementation without alternative measures for the public is incongruent with the Constitution since failure to prepay for potable water would nullify the human right to water. Hence it was fundamental to identify the perceptions of the Harare residents with regards to the effectiveness of prepaid water meters for potable water supply. In retrospect, a study by Gambe (2013) reiterated that residents espouse the Constitution of Zimbabwe (2013) and several other soft-law instruments to which Zimbabwe is endorsed, thus explicitly confirming that water is an undeniable right. It is for these exact reasons that this study argues that coercing residents to prepay for an undeniable right without sustainable alternative means of potable water supply to moderate the effects will be punitive (Chigumira & Mujere, 2009; Matabvu, 2015). Thus it would be rational that the Harare City Council debriefs the residents on all the factors relating to the residents still retaining their constitutional right to potable water supply, even with prepaid water meter implementation. This also includes the Harare City Council acknowledging that prepaid water meter implementation should not result in any form of potable water privatization which is generally linked to exorbitant water costs (CHRA, 2015; Jenny & Nilson, 2012; Ruiters, 2011).

Thompson and de Wet (2013) acknowledge that the service provider owes it to the residents to substantially justify the reasons for prepaid water metering since they are the service users. Resultantly, failure by the Harare City Council to explicitly justify their reasons for prepaid water meter implementation thirty-eight years’ post-independence has created a rift between the public and the city council. This was confirmed by a Harare Residents Trust (HRT) official who confirmed that a feasibility study they undertook pointed to the non-receptiveness of residents because they have not received any rational explanations (Matabvu, 2016). In the HRT study, the residents argue that they find no simple logic in having confidence in the Harare City Council’s adoption of prepaid water meters in a bid to expand potable water supplies (CHRA, 2015). International Water Association (2004); Chikozho (2006); Kayaga (2008) affirm on the need for open dialogue channels between the residents and the

service provider, which is a clear indication of the resident's need to be consulted and involved prior, during and after the implementation of the prepaid water meters. Ultimately, this study confirms that the Harare City Council is espousing a top-down approach and from a service delivery perspective, lack of public participation is a major constituent of bad governance. As a result, the second Dublin Principle (2) confirms on ensuring comprehensive participatory approach in matters regarding the management and development of water policies (WHO, 2015).

3.6 MATERIALS AND METHODS

Rosnow and Rosenthal (2008:74) acknowledge that qualitative research encourages an interpretation of sense, acquaintance, and observations. Kumar (2005) defines quantitative research as an inquiry of a phenomenon enabled by investigating a concept that can be measured arithmetically and evaluated statistically. This study was advised by the mixed method approach in integrating both qualitative and quantitative research instruments. Triangulation enabled the author to answer the research question from diverse angles. Leedy (2005) maintains that triangulation in research has the ability to support the researcher to depict an objective analysis of the data and findings of the study. The qualitative research method prompted the author to use purposive sampling to select the key informants from the Harare city council authorities who were in charge of the prepaid water metering implementation process.

Purposive sampling was also used in selecting the participants from civil water organizations because they are the catalysts between the Harare residents and the Harare City Council authorities. The basis for using purposive sampling was to allow the author to select the respondents who have better knowledge of the efficacy of prepaid water meters. Alternatively, quantitative research prompted the author to use systematic sampling in selecting the Harare residents because it adopts simple random sampling at the beginning in order to establish a sampling interval which creates a quasi-random selection method. The author identified the first respondent from the Harare City Council registry and the remaining residents were selected using the sampling interval of the 5th element of the whole population from the Harare City Council registry. The estimated representative sample size for the

survey was derived from the Raosoft sample size calculator for the maximum variability of the sample based on the population of Harare (Raosoft, 2004).

Dirwai and Gwimbi (2003) note that there is a wide range of data collection instruments that can be used in obtaining data and among these are interviews, intake forms, questionnaires, and documents. Kumar (2005) maintains that the selection of these data collection instruments precisely depends on the choice of the research method, the study topic and the availability of data. Hence from this discourse, structured questionnaires were self-administered to 271 Harare residents because questionnaires are most appropriate when establishing a relationship between variables when there is a large sample involved. Face to face and telephonic key informant interviews with ten Harare City Council officials were undertaken to understand their technical capacity in providing alternative adaption strategies of potable water provision to the residents. Two focus group discussions, with each group consisting of ten participants, were held under the guidance of a moderator.

These participants were inclusive of the Combined Harare Residents Association and Harare Residents Trust officials who form the civil organizations that are key catalysts between the Harare City Council and the Harare residents. The author used descriptive statistical methods through SPSS to analyze the findings of the study as gathered from the structured questionnaires that were administered to the residents. Content analysis was used to analyze the focus group discussions and the interviews because it gave a descriptive presentation of data (Bak, 2004). Thematic analysis was ultimately used in discussing the common and recurrent themes from the data gathered.

Table 3 Designation of respondents

DESIGNATION OF RESPONDENTS	TARGETED RESPONDENTS	INSTRUMENT	ANALYSIS
Harare City Council authorities	10	Key Informant Interviews	Thematic Coding
Civil water organizations officials	20	Focus Group Discussions	Content
Harare residents	271	Questionnaires	SPSS
Total Population	301		

Source: Own Illustration (2017)

3.7 RESULTS AND FINDINGS

The study established the gender, age, household size, occupation, marital status and property ownership within each residential area surveyed in Harare, in identifying their perceptions with regards to the effectiveness of prepaid water meters.

The study established that of the 271 respondents that participated in the survey 50, 3% were males and only 46, 7% of those respondents were females as highlighted below. It is essential to highlight that gender dynamics are critical to this study because women are responsible for ensuring the availability of potable water for the household as compared to men.

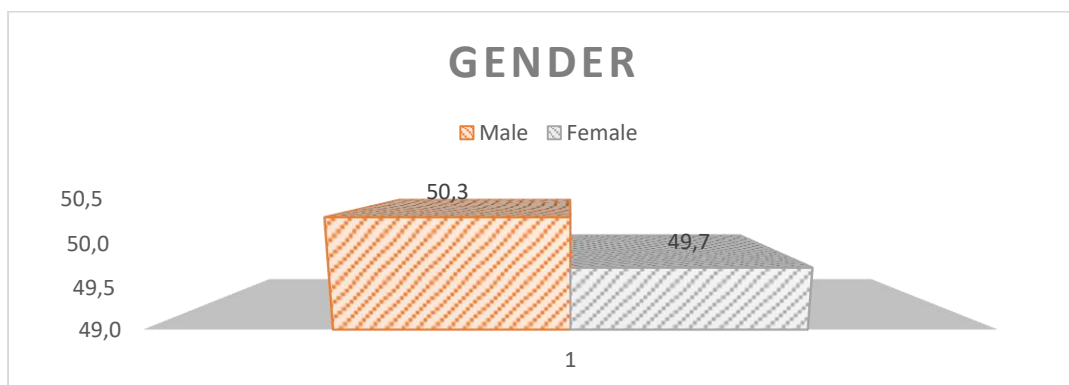


Figure 12 Gender

The study also established that 7,8% of the 271 respondents who participated in the survey were aged between 16-20 years and 45,6% was aged between 21-30 years, whilst 17,8% was aged between 31-40 years and 13,9% was aged over 50 years as well.

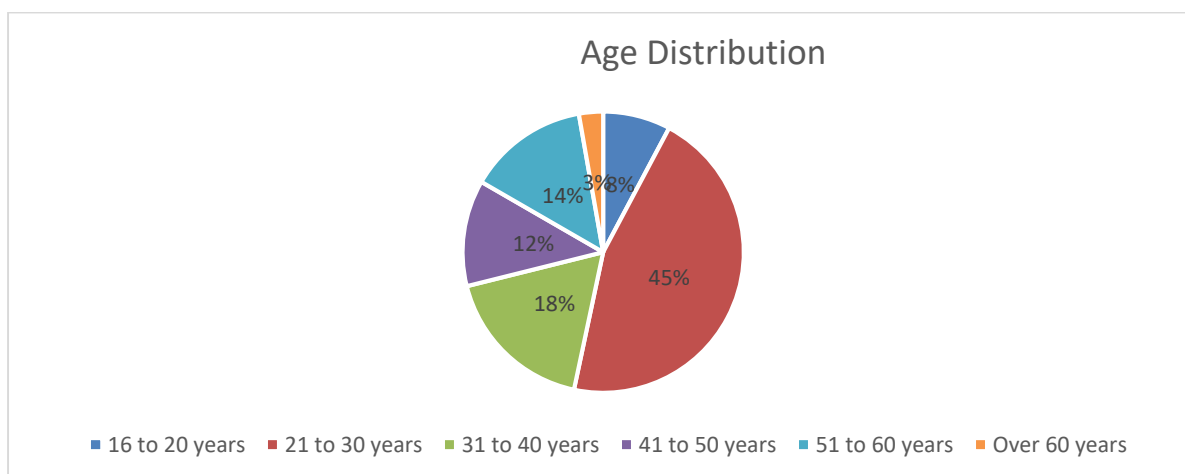


Figure 13 Age Distribution

The bar graph below is a clear representation of the study results which reflect that 46, 7% of the respondents live in a household which has less than 5 occupants, whilst 51, 7% of the respondents live in a household which has a minimum of 6 occupants and only 1, 7% of the respondents live in a household which has more than ten occupants. This is meant to give insight into the socio-economic dynamics

of the Harare residents from the sampled residential areas. Understanding those socio-economic dynamics enables a clear reflection of the efficacy of prepaid water meter implementation for potable water provision in the Harare City Council.

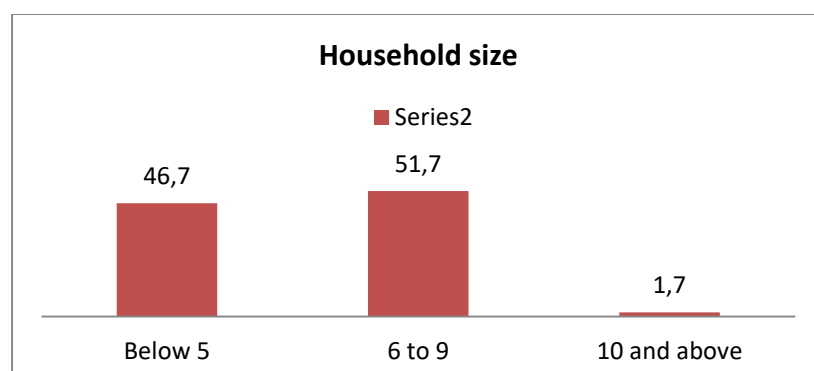


Figure 14 Household Size

Given the current socio-economic condition in Zimbabwe, the study established that 53, 6% of the respondents are formally employed and this does not imply that they have direct access to money by reflecting on the cash crisis that is prevalent in Zimbabwe. Out of the 271 respondents that participated in the survey 33, 5% are unemployed and only 12, 8% noted that they are self-employed which means they have other unconventional means of income. These demographics are significant because if 33, 5% of the population sampled from is unemployed this implies that they will struggle to access money to make payments before accessing potable water.

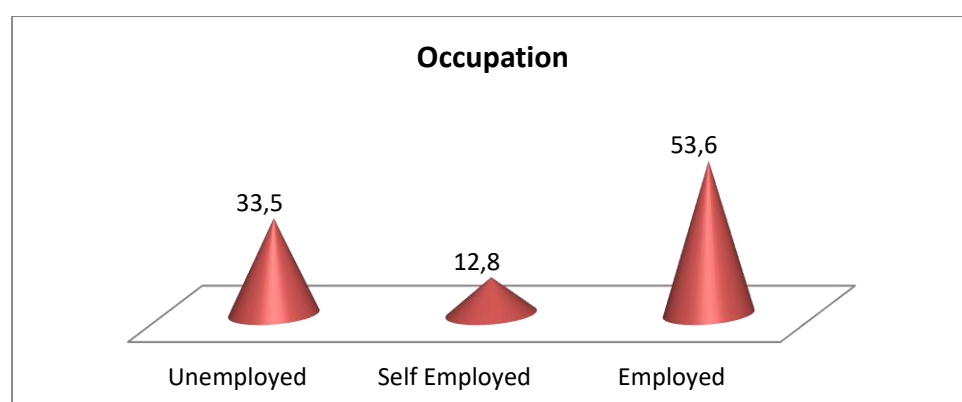


Figure 15 Occupation

Findings from this study reveal that of the 271 respondents that participated in the survey a greater portion of them with a 50% allocation are single, whilst 40, 0% are married, only 4, 4% are divorced and 5, 6% of the population is widowed.

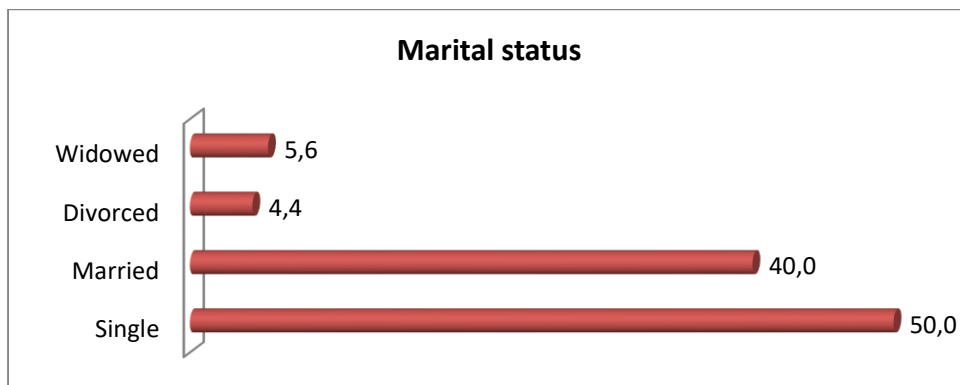


Figure 16 Marital Status

The pie-chart below is a clear reflection that 38% which is a greater population of the participants reside in the high-density areas and an almost exact average 37% of the participants reside in the medium density areas, whilst the low-density areas had 23% of the participants, with only 2% of the 271 respondents residing within the Central Business District (CBD) of Harare. This pie chart gives an indication that, a greater population of the residents are from low-income areas and as a result, the implementation of prepaid water meters will have a greater effect on this quintile.

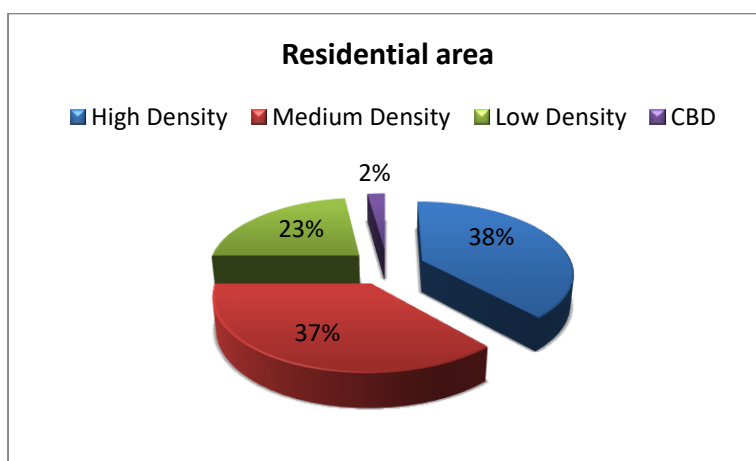


Figure 17 Residential Area

The study reveals that 52% of the 271 respondents from the survey are landlords who own the households in which they reside and 48% of the target population consists of tenants who do not own the properties in which they reside. This section of the demographics is meant to highlight the essence of dynamics surrounding tenancy with regards to payment upon the implementation of prepaid water meters.

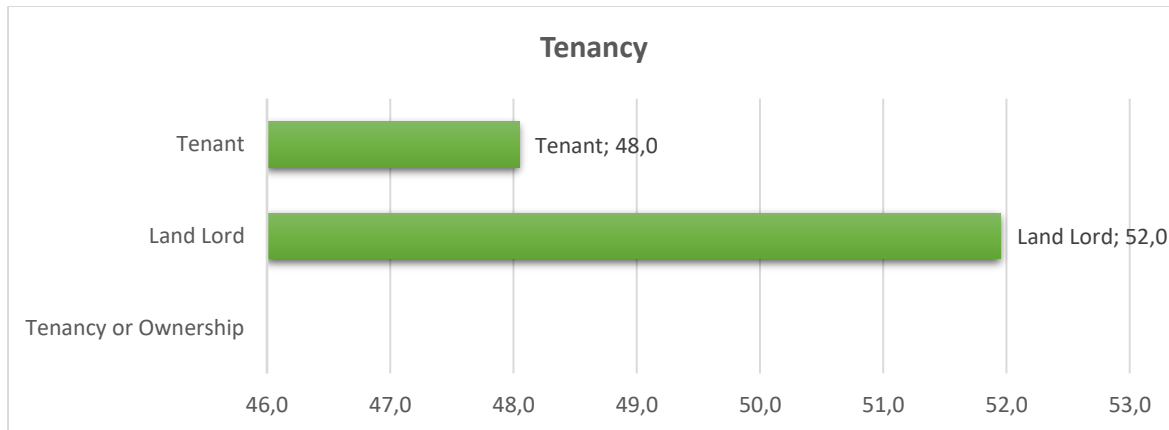


Figure 18 Tenancy

3.8 THE PREPAID WATER METER SET-UP

This study established that prepaid water meters require technical expertise because they are technologically and electronically driven. Based on the responses from the study, the author gathered that PPWM's operate on payment for a service before accessing the service to reassure payment and to promote water or resource conservation in situations where there is high demand.

A CHRA Official noted that:

“The prepayment system involves the electronic control of a gadget whose access is technologically driven to manage demand and encourage payment for services.”

A Harare Residents Trust Official highlighted that:

“PPWM's are being implemented as water management gadgets and it involves only paying for what you use. The reason for debt recovery is also a preposition. We rejected them because we do not even have water and we do not even have the money to prepay. PPWM's are complex and we will be highly taxed to sustain the system and it is very expensive because they

malfunction from water supply interruptions. It is just a cruel form of privatization and on behalf of the residents, we do not want them at all.”

The PPWM's are being implemented as water management and revenue collection tools, despite the Harare residents having rejected them (Matabvu, 2016). The Harare residents also maintained that they have not had potable water supply for almost two decades (Chaminuka & Nyatsanza, 2013; Hove & Tirimboi, 2011). Additionally, Matabvu (2015) notes that there is no assurance that PPWM's can ensure consistent potable water supply to households because they only change the method of payment not the source of water. The respondents also argued that the city council has so much to lose if they implement the PPWM's because the residents will not prepay, instead they will keep using their alternative sources of potable water which they argue to be more “sustainable” than the city council's supply or lack thereof to supply. Hence these responses affirm the hypothesis underlying the study that the residents have a negative perception of the prepaid water meters for potable water provision in Harare.

3.9 PERCEPTION OF RESIDENTS TOWARDS POST-PAID METERS

Chaminuka and Nyatsanza (2013); Chatiza (2016) affirm that equitable access to potable water supply should be at least rationed as twenty liter's or more per individual within the household and it should be accessible from within one kilometer of the household. The UNDP Human Development Report (2006:65) also asserts that the WHO and the UNDP advocated that, “every person has a human right to a minimum of about twenty liters each day in terms of establishing social minimum provision levels”. Unfortunately, Chigumire and Mujere (2009) assert that a greater population within Harare presently do not have access to potable water supply, such that they store water in various household utensils like buckets and pots. Most of this water is stored for lengthy periods of time because it is gathered in vast amounts to cut out on collection time (Gambe, 2013). As a result, the potable water is either contaminated or discolored when it is used. Nhema and Zinyama (2016) acknowledge that this is an indicator of the failure of the Harare City Council in ensuring residents have access to potable water supply even with the post-paid meters.

Hence the residents would be justified in refuting the prepaid water meters since the City Council is presently failing in ensuring adequate potable piped water supply to the residents and there is no guarantee in administering prepaid water meters. The empirical findings reveal that residential areas in Harare do not have access to piped potable water supply and as a result, they have resorted to conventional and unconventional sources of potable water supply (Mudzingwa, 2015). The Harare City Council has failed the residents as a service provider even with the post-paid meters such that the effects have a greater ripple effect on women and girl children who bear the brunt of household water collection for lengthy periods (Nhema & Zinyama, 2016; Majuru et.al, 2016). Evidence of dissatisfaction with post-paid water meters is predominant because residents have to wake up very early or sleep very late to ensure a daily household supply of potable water is secured from the few sources such as water merchants, boreholes or wells. In high-density areas within Harare such as Mufakose, Mabvuku, Glen-view, and Glen-Norah, women have to wake up before 3 am to catch-up with the long-winding queues at the communal boreholes (Mangizvo & Kapungu, 2010).



Picture 2 Sources of potable water provision

Source: Adapted from (CHRA, 2015)

A greater population of the Harare residents actually rely on boiling water or disinfecting it through filtration or using water disinfectants. Empirical evidence from this study shows that, out of the total respondents, 31.8% disagreed and 22.7% agreed on the satisfaction with post-paid water meters. The graph shows the satisfaction of residents with post-paid meters basing on the four residential areas that were focused on in the study. Thus, 50% of the CBD residents agreed to be satisfied followed by 25% of the CBD residents who disagreed and strongly disagreed respectively. 29% of the low-density residents strongly agreed to be satisfied with the post-paid meters followed by 25.6%, 23.1% and 17.9% of the low-density residents who strongly agreed, agreed and were not sure respectively. In the medium density areas, 27.7% of the residents disagreed with being satisfied with the post-paid meter. This was followed by 24.6%, 20% and 15.4% of the medium density residents who strongly disagreed, agreed and were not sure respectively. Likewise, 38% of the high-density area residents disagreed with being satisfied with the post-paid meters. This was followed by 23.5%, 19.1% and 16.2% of the high-density residents who agreed, strongly agreed and strongly disagreed respectively to the satisfaction of post-paid water meters.

A Harare Residents Trust Official noted that:

“PPWM’s do not work well because they have a life-span of 3-5 years which is very short as compared to the conventional meters. The fixed payment is better than prepayment in the context of Zimbabwe as a failed state and electricity is a luxury but water is a human right? It will expose us to water-borne diseases because of the dynamics surrounding prepayment. They should restructure the fixed system so that we get water than employing an infrastructure that will not increase the water supply.”

A Harare City Council Official indicated that:

“From those involved in the PPWM pilot project, positive comments are emanating because residents can now budget and account for water usage as compared to conventional meters. Some are still skeptical due to fear of the unknown.”

Citizen's perceptions as revealed from the interviews point to the susceptibility to malfunctioning of PPWM's due to a limited life-span in contrast to the post-paid meters (Thompson & de Wet, 2013; Harvey, 2005), which implies they need constant servicing and maintenance and the financial burden will always trickle down to the residents. Residents also argue that in the context of Zimbabwe as a fragile state PPWM's are not sustainable because water is a human right and citizens will be affected when they do not have credit, which will expose them to water-borne diseases (WHO, 2015; UNICEF, 2016). Residents ultimately confirmed that PPWM's will tear the social fabric apart, hence the City Council should restructure the existing system and ensure constant potable water supply to meet the water demands before implementing PPWM's because PPWM's will certainly not guarantee water supply. From a discussion with the Harare City Council, the study gathered that some of the residents are giving positive feedback because PPWM's permit them to plan, budget and account for their potable water usage; however, some residents are still skeptical on the efficacy of prepaid water meters for potable water provision.

3.10 CITIZEN'S PERCEPTIONS TOWARDS PREPAID WATER METERS

Prepaid water metering essentially entails that payments for potable water services is done before receiving the supply of potable water whilst post-paid metering entails paying for services on a monthly basis after consumption (Mudzingwa, 2015; Chatiza, 2016; Heymans et.al, 2014). Thompson and de Wet (2013) avows that post-paid meters are plausible in providing an allowance of non-disconnection for low-income households that fail to pay for services, because they still get access to potable water supply without prepaying. However, Matsinhe et al., (2014) cite that, post-paid meters have the downside of creating ignorance to the essence of payment for services as a responsible citizen and this ultimately leads to debt accrual, which the Harare City Council is succumbing to. It is against this background that the study argues that, given the socio-economic status of Zimbabwe, not everyone will be able to prepay and thus the resident will be inhibited from the potable water supply until they recharge again. WWAP/UNESCO (2006); Xie (2006) also note that the predicament is that prolonged periods of absence of potable water supply have a direct effect on the quality of water when it is ultimately delivered because it becomes contaminated or unsafe for consumption because the

pipes will be idle. Thus, CHRA (2015); Chirisa (2013); Mudzingwa (2015) maintain that prepaid water meters are arguably complex and more technical than post-paid water meters, which makes the former much more susceptible to malfunctioning.

Hence, this study notes that the effectiveness of prepaid water meters is highly dependent upon a lot of factors which cannot be easily cultivated by the Harare City Council given the socio-economic status of the country. This study is certainly not meant to disregard the effectiveness of prepaid water meters, but it is imperative to factor in the dynamics that surround prepaid water metering in comprehending the efficacy of prepaid water meters for potable water provision. Resultantly, of the total 271 respondents that participated in the survey, 35.2% agreed as well as 25% who strongly agreed to the effectiveness of PPWM's over a post-paid meter. The graphical presentation reveals that most of the respondents that strongly disagreed with prepaid meters being more effective over post-paid meters were from medium density areas with 66.7%. This was followed by 87% of the high-density residents who disagreed and 48.6% of the high-density residents who were also not sure of the effectiveness of the PPWM's over the post-paid meters. Most of the respondents who agreed to PPWM's being more effective than post-paid meter were from low-density areas with 35.5% of the residents confirming this and those who strongly agreed were from the medium density areas 47.7% as highlighted below.

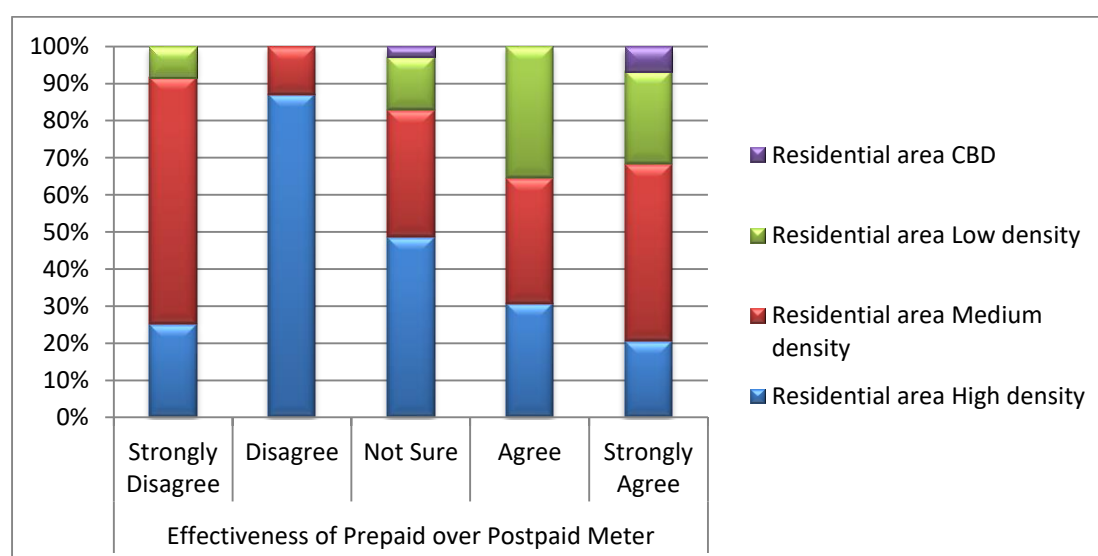


Figure 19 Citizen's perceptions towards PPWM's

A CHRA Official noted that:

“PPWM’s will not efficiently meet the potable water needs of the Harare residents because they will not guarantee quality water provision and we need to understand that it does not change Lake Chivero as the raw water source. Hence it is actually nonsense that PPWM’s will efficiently meet potable water needs because they are just an extension of the corrupt system.”

A Harare Residents Trust stated that:

“PPWM’s will not meet the needs because even the fixed system does not deliver to everyone and it will actually worsen the present situation. What about the low-income residents, women are already disadvantaged with the current water shortages.”

Feedback from the research comprehended that PPWM’s will unfortunately not meet the potable water needs of the residents because PPWM’s do not change the source of raw water, rather they only change the methods of payment. Hence the residents dispute the effectiveness of PPWM, citing that they are simply an expensive extension of the corrupt City Council. The study also reveals that there is mistrust between the residents and the City authorities because the residents perceive the latter to be corrupt and inefficient because they are misdirecting their focus as service providers into profit makers (Musingafi & Chadamoyo, 2013). The resident's associations cited a plethora of challenges that are currently underpinning the City Council which cannot inexplicably transform the potable water system by implementing PPWM’s. The argument is that they should redirect their focus to ensuring quality and effective service provision then capitalize on profit making when there is customers satisfaction (Murungweni, 2013; Chirisa, 2013).

Chatiza (2016); Matabvu (2016) argue that the effectiveness of PPWM’s is still yet to be realized, considering there is a simpler conventional system that has been slowly dilapidating due to failure to restructure by the city council for the past thirty-eight years. The residents also argue that PPWM’s will only change the billing system and the source and means of water supply will still remain the same. Thus, the effectiveness of PPWM’s accordingly becomes inexplicable, because if the Harare

City Council failed to sustain a simpler post-paid meter, hence what guarantee is there that it will be effective in ensuring the effectiveness of the complex PPWM's. This confirms the hypothesis of this study that residents actually have a negative perception towards the efficacy of PPWM's for potable water provision. It is essential to note that PPWM's will not change the potable water quality, which residents already argue to be smelly, dirty and discolored (Chirenda et al., 2015; Majuru et al., 2016). Thus, the respondent cited that even if the PPWM's were to be effective, the city council is not cooperative due to endemic corruption, so prepaying for water will be promoting corruption. This means that the effectiveness of the PPWM's will not be fully exploited because residents argue that they will not pay thereby affecting the cash flow system of the Harare city council.

A Harare City Council Official highlighted that:

“In terms of revenue collection, PPWM's will be more effective because if you do not pay you do not get water, but let us not forget this will also have the downside of thrusting residents into unhealthy and alternative sources of water.”

Another Harare City Council Official indicated that:

“Yes, they will be effective since the user pay principle brings a sense of belonging which leads to a dramatic reduction in gross abuse and wastage.”

Results from the study also espouse that, the Harare City Council acknowledges the effectiveness of PPWM's over post-paid meters in terms of revenue collection since there is an element of coercion to pay in order to access potable water supply. Nonetheless, the city council also noted the challenges that might arise for households that are unable to purchase water since they will be forced to resort to unsustainable means, thereby creating adverse effects relating to water-borne diseases outbreak (Chatiza, 2016; Chikozho, 2006). The study comprehended that; the city council anticipates that PPWM's will effectively operate against all odds. However, this study would like to note that the city council is solely focused on the element of revenue accrual and ignoring the effectiveness of the PPWM's in the event that residents do not actually pay for the services, given their arguments as aforementioned. This resultantly confirms the hypothesis of this study that, Harare City Council does not have the technical capacity to effectively administer the prepaid water meters for potable water provision.

3.11 PERCEPTIONS OF CITIZENS TOWARDS PPWM'S AS A RESTRICTIVE TOOL

WHO (2010); Makwara (2011); CAPNET (2009) assert that from a human rights perspective it is the sole responsibility of a citizen to ensure that they preserve potable water as a resource which is limited yet under extreme demand. From a climatic change discourse, preserving water is also quite essential given the effects of climate change and the impact of the inconsistent rainfall patterns (Mugambiwa & Tirivangasi, 2017). Hence, the Harare City Council, as well as the advocates of prepaid water meters, argue that the meters act as deterrents against potable water wastage, particularly non-revenue water (Gambe, 2013). However, critics of prepaid water meters argue that the meters are a punitive measure for residents because they inhibit access and limit them from adequately using potable water because there is an unconscious reminder that credit will be exhausted (Mudzingwa, 2015; Matabvu, 2016).

Out of the total 271 respondents, 41.5 % of them strongly agreed and 37.5% of them agreed that PPWM has the potential of being a restrictive measure against wastage of potable water. The graph shows that 50% of the high-density respondents revealed that they strongly disagreed that PPWM's are a deterrent against wastage. This was also followed by 56.3% of the high-density dwellers who disagreed as well as 52.9% of the high-density dwellers who were not sure that PPWM's will be a deterrent against potable water wastage. Most of the respondents who agreed to prepaid water meters being deterrents against potable water wastage were residents within the medium density areas (43.9%) and those who also strongly agreed were residents within the medium density (37%) as highlighted by the graph below.

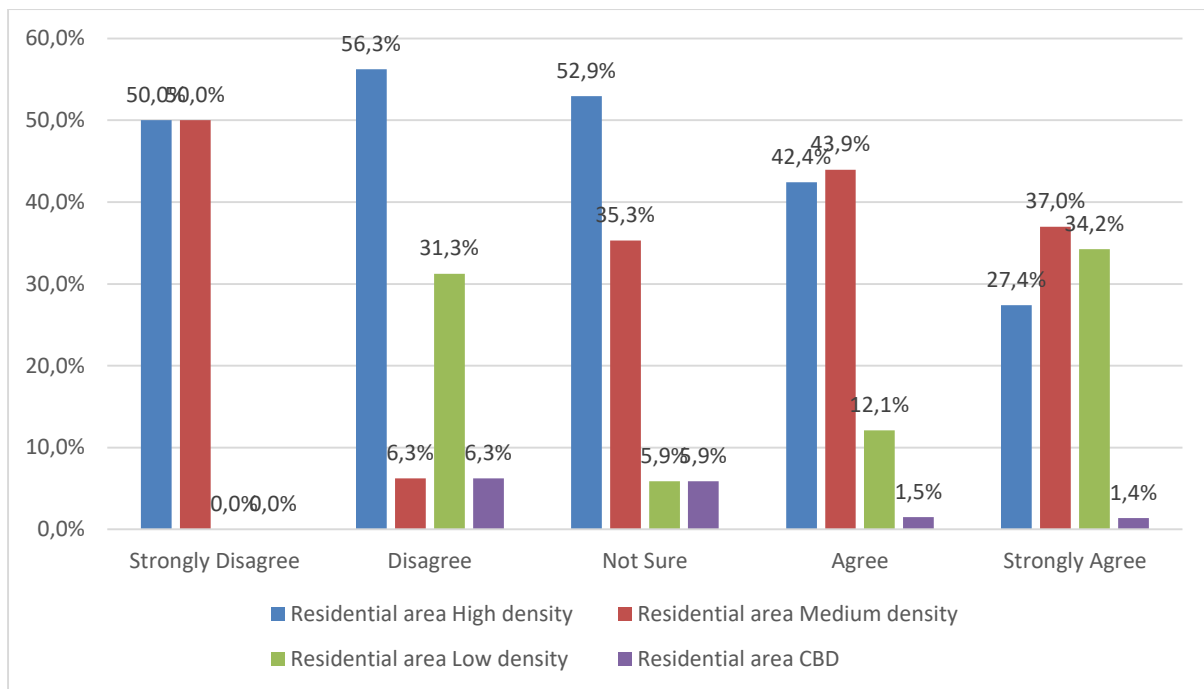


Figure 20 Perceptions of citizens towards PPWM's as restrictive tool

A CHRA Official stated that:

“It would definitely encourage residents to save water.”

A Harare Residents Trust Official argued that:

“Residents are planning to use boreholes which will ultimately save water involuntarily, but it will not encourage them to voluntarily save council water supply or to pay.”

The study confirms that, despite the residents contending against the PPWM implementation, they argue that the implementation would, however, encourage residents to save water and be more alert when there are burst pipes and leakages, because it would be costly on their credit (Gerlach & Richards, 2010; Carion et al., 2012). Some residents argue that, despite the implementation of PPWM's, residents will not use them. Thus, there will not be any need to voluntarily save any council water supply because they will involuntarily save it by using boreholes which they are already using since they prefer them to be much cheaper. This simply goes on to reflect on the absence of an open dialogue between the residents and the City

Council because it is the mandate of the service provider to consult and involve the user on a service delivery mechanism prior to implementation.

A Harare City Council Official highlighted that:

“Not necessarily will PPWM’s promote saving, because saving water and using water sparingly are not synonymous, such that the residents should cut down on certain uses and find alternatives.”

Another Harare City Council Official indicated that:

“Yes they will encourage saving water since you pay for what you consume and this need justifies saving due to prior payment.”

The study established that the Harare City Council acknowledges the contrast that exists between “saving” water and “sparingly” using water, such that PPWM’s have the potential to incite both. Hence it becomes necessary that urbanites should engage other sustainable alternatives of potable water supply as provided by the service provider as argued by (Mudzingwa, 2015). The study further gathered that the Harare City Council concedes that PPWM’s will definitely encourage the residents to save water because the idea of prepaying will by default ensure accountability for potable water use to ensure value for money. Likewise, EWASH Fact Sheet 5 (2009); WB (2015) maintain that prepaid water meters are a means of controlling water demand and supply through the essence of ensuring a reduction in wastage since households become more aware and conscious of their consumption since they prepay for it and they can be disconnected inter alia. However, this study underscores that caution has to be exercised by the Harare City Council in curtailing the influx of water-borne diseases in the attempt to save potable water.

3.12 PERCEPTIONS OF CITIZENS TOWARDS PPWM’S AND PAYMENT

Chatiza (2016); Abu-Hilou and Jarrar (2012); Von Schiltzer (2013) note the fundamental underlying essence of prepaid water meters to be the promotion of payment for services and in principle prepaid water meters might promote payment for services but in practice, the Harare residents are arguing otherwise. Prior to prepaid water implementation, residents also contend the post-paid water meters citing that they are based on unfounded estimated bills. Conversely, prepaid water

meters also have the merits of reducing the costs relating to inaccurate monthly estimates which are based on meter readings, which most residents tamper with (Bakker, 2007; Jenny & Nilson, 2012). Prepaid water meters are also beneficial for the residents because it gives them control over their potable water consumption as well as ensuring accountability over reliable metering since the user pays on the go (Berg & Mugisha, 2010, Bakker, 2007; Drakeford, 1998). Prepaid water meter advocates also espouse that, prepaid water meters have merits for the residents because they are error free in terms of meter reading as with the case of post-paid water meters (Ruiters, 2011; Chaminuka & Nyatsanza, 2013). As a result, all things being constant prepaid water meters have the merits of ensuring payment is done, which is beneficial for the service provider for revenue accrual, in the long run, it will be cultivated back into infrastructural resuscitation.

Out of the total respondents 271 respondents surveyed, 44% agreed and 26.9% strongly agreed that PPWM's are useful in the promotion of payment. The graphical presentation below, clearly reveals that a greater population of the respondents that strongly disagreed with the assertion that PPWM's will promote payment for services were from high-density areas (50%). However, 44, 2% of the high-density residents also agree that PPWM's will promote payment of services, with 42, 9% of the high-density residents not being sure of the assertion. This was followed by 66.7% out of the total 271 residents from the medium density areas who disagreed with the assertion as well as 25, 7% of the medium density areas that were not sure. 27, 7% of the low-density residents strongly agree that PPWM's will promote payment for services, with 18, 2% also agreeing to the assertion and 28, 6% of the low-density residents not being sure. Consequently, this study argues that the Harare City Council is oblivious of the dynamics surrounding the unwillingness to pay and the inability to pay. Bearing this in mind, (Makwara, 2011; Berg & Mugisha, 2010) espouse the delineation between the two brackets of citizens and implementing prepaid water meters on residents who are unable to pay is punitive and restrictive.

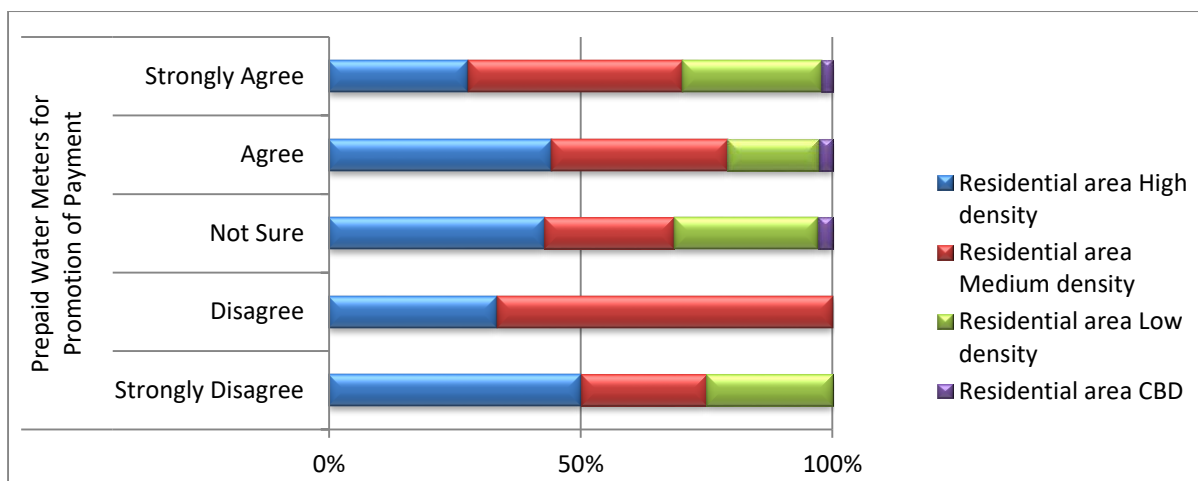


Figure 21 Perceptions of citizens towards PPWM's and payment

Hence, proponents of prepaid water meters maintain that, ensuring revenue accrual will enable the service provider to reinvest in the restructuring of the potable water system, which is ultimately beneficial for the public (Bakker, 2002; Bond, 2002). Nhema & Zinyama (2016) argue that prepaid electricity implementation has propagated prepaid water implementation due to the success in revenue accrual. However, this study continuously argues that equating electricity to potable water is irrational because electricity is a want and potable water is a basic need that is constitutionally grounded (Constitution of Zimbabwe, 2013). This study, explicitly declares that prepaid electricity metering should never be placed on the same scale with prepaid water metering and this could also be the reason why prepaid water metering has not registered as much success stories and some countries have totally banned them (Drakeford, 1998; OFWAT; 1998; BMA, 1994).

A CHRA Official noted that:

“The city council has not even looked at the payment aspect. They are forgetting that technology operates within a particular frame. People do not even have the money anyway, hence they will not even pay because there is no water, to begin with.”

A Harare Residents Trust Official indicated that:

“They will not even promote any payments because we do not even pay anyway since we do not get the water. The pipes have not been restructured, so even if we get the water, we have other alternatives (boreholes, water tanks amongst others) and we are not even worried about the council water.

It is not necessarily about water payment but about accessibility, availability, and affordability, so all they need to do is to first fix the existing system and then we can gradually initiate other complex means.”

The study comprehended that the City council is being ignorant of the technological aspect of the PPWM set-up and simply capitalizing on profit accrual. As a matter of fact, profit accrual might not be as successful as projected because there is a national cash-crisis and this might ultimately further set the city council back into overwhelming debt (Matabvu, 2015; Nhema & Zinyama, 2016). The study establishes that PPWM's will not necessarily promote payment but they will coerce residents to pay for a service whose quality they are not even certain of. This reflects on the significance of consultation and public participation in the service provision spectrum to ensure comprehensive stakeholder engagement (International Water Association, 2004; Zhou, 2013; Nhede, 2012). Harare Residents Trust disclaims the promotion of payment for water by PPWM's citing that residents currently do not pay for services because they lack access to water supply because the infrastructure is dilapidated and the council is inept so the difference is the same because residents have alternatives. They also argue that, the water supply for those who receive it is unclean and beyond human consumption (Nhapi, 2009; Hove & Tirimboi, 2011; Majuru et al., 2016).

Hence the city council should redirect their focus on restructuring the existing system to ensure that it delivers clean water before focusing on prepayment. The residents association mentioned that there are countries with better economies that rejected PPWM's and it is not rational for Zimbabwe as a fragile state to implement them. This is because the crux of potable water is surrounded by affordability, availability, and accessibility of water (JMP, 2017; Majuru et al, 2016); therefore payment is not a fundamental matter per se in the absence of the aforementioned factors.

A Harare City Council Official noted that:

“There is lots of coercion to pay as opposed to promotion to pay. Since there is no other option available and residents will just pay involuntarily, but there is the likelihood of reduced water consumption which translates into many unforeseen issues”.

Another Harare City Council Official argued that:

“Water treatment and supply is a systematic business that operates on a cash flow basis and residents as ratepayers should learn to pay for services to ensure the systematic movement of supplies which enable provision of quality potable water.”

The research confirms that the Harare city council avows that PPWM's are compulsion rather than voluntary tools of ensuring payment for services because it is either you pay or you risk disconnection from the water supply (Harris, 2003; Chaminuka & Nyatsanza, 2013). The Harare City Council also confirms that the abrupt disconnection has a plethora of challenges to which residents are exposed to in the absence of potable water supply as exemplified by what transpired in South Africa (Xie, 2006). The study also established that the Harare City Council asserts that PPWM's are a means to ensure they keep their systematic “business” running, thus residents have to learn to reciprocate by paying for what they use. This confirms the researcher's assertion that the Harare City Council is a system with reference to the systems theory of service delivery.

Hence, Miller (2007) states that a system is a collection of independent but interconnected components organized in a meaningful manner in the bid to accomplish an overall goal. Sousa and Voss (2006) also avow that a system exists to interact, produce, consume and exchange an array of goods and services. This simply implies that the accomplishment of goals by the Harare City Council as a system is mainly dependent upon the continuous feedback between the different components of the system and payment from the residents is also an essential factor (Vasquez, 2017). The study established that the national economic crisis is a major obstacle that will deter the residents from payment because even though they might want to pay for the water they do not even have the money, to begin with. This does not come as a surprise given the fact that Zimbabwe ranks number 16 on the Global Foreign Policy's Failed States Index of 2016 after scoring 100.5 (Nhema & Zinyama 2016).

3.13 PERCEPTIONS OF CITIZENS TOWARDS PPWM'S AND HUMAN RIGHTS

Prepaid water meter challengers assert that residents in developing nations do not have the financial muscle to prepay for potable water services and thus implementing them promotes the nullification of the human right to potable water access (Chaminuka & Nyatsanza, 2013; Matabvu, 2016). Instantaneously, they further argue that when residents do not have access to potable water supply, it will drive them to consume water from unconventional sources which are directly tied to causing water-borne infections, which constitute for infant mortality (Mutangabende & Shava, 2016; Mangizvo & Kapungu, 2010; JMP, 2017). This study resultantly argues that the Harare City Council should ring-fence the low-income residents from the adverse effects relating to prepaid water implementation so that they can be ensured a certain tariff of free water or a certain ration whilst maintaining public service efficiency. JMP (2017) also affirms that access to potable water mandates the public service provider to be inventive in ensuring the establishment of plausible potable water systems, which are all encompassing for both the service provider and the residents, particularly the low-income households (Bakker, 2007).

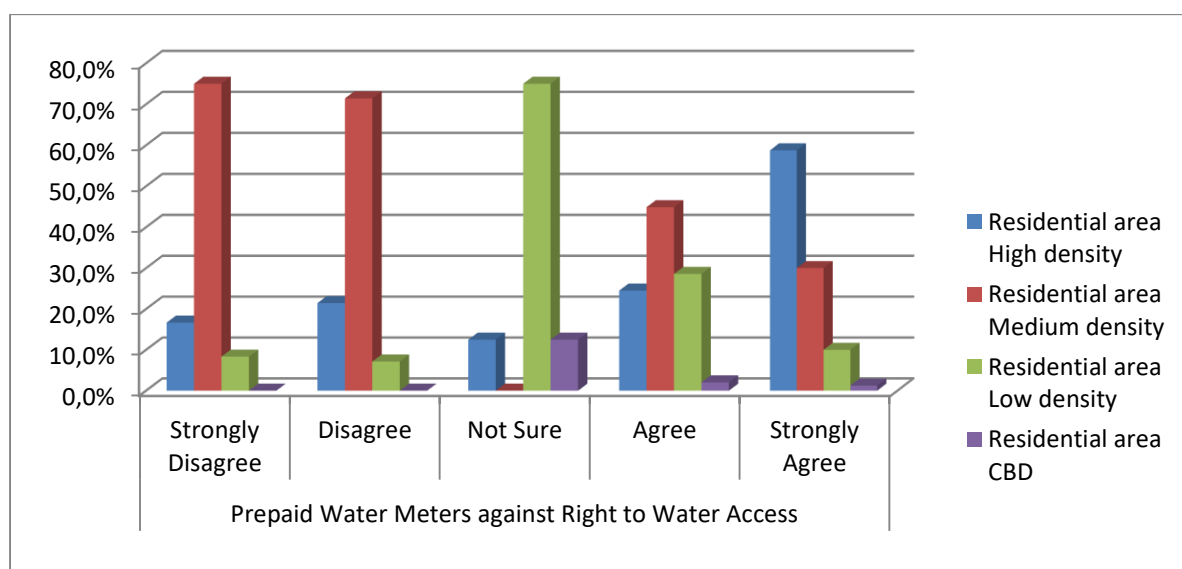


Figure 22 Perceptions of citizens towards PPWM's and human rights

Out of the 271 respondents surveyed 46.8% agreed and 28.7% strongly agreed that the implementation of PPWM's is an infringement on the human right to access potable water. Thus, this study confirms that the effectiveness of PPWM's cannot be fully exploited if they are nullifying the human right to water. The graphical

presentation shows that 75% of the medium density residents strongly disagreed with the assertion that PPWM's will negate the human right to access potable water. 71.4% of the medium density residents also with the assertion, with 44, 9% of the medium density residents agreeing to the assertion and only 30, 0% strongly agreeing. 75, 0% of the low-density residents were not sure, with 28, 6% of the low-density residents agreeing that PPWM's will disavow the human right to water. 58, 8% of the high-density residents strongly agreed that PPWM's will nullify the human right to water and only 16, 7% strongly disagreeing with the assertion and only 12, 5% not being sure of the assertion as graphically presented above.

Based on the findings, the study argues that gender equity, socio-economic development, and humanity can only be cultivated in the framework of ensuring access to potable water supply. As a result, the public service provider should exercise careful thought, pending prepaid water implementation. Likewise, International Water Association (2004); Zhou (2013); Mazorodze, 2012) note that the implementation of an all-encompassing potable water provision tool should essentially reflect on the needs and wants of the residents within the confines of the financial and technical capacity of the service provider. In this regard, this study explicitly declares that potable water services do not necessarily have to be delivered for free, but then, certain tariff arrangements can be facilitated based on residential areas or means test approach for each household to ensure sustainability for both the service provider and the residents.

3.14 CONCLUSION

In the summative, the aim of this study was not to disregard prepaid water meters but to understand their efficacy through the lenses of the citizens as the service users who play a vital role in enabling the effectiveness or ineffectiveness of the meters. Accordingly, in identifying the perceptions of the Harare residents regarding the effectiveness of prepaid water meters for concrete potable water supply, the study admits that there are diverse responses from the residents. It is reflective of the responses that some residents are actually very receptive to the prepaid water meters citing that they will ensure accountability and value for money. Simultaneously, some of the residents are still intolerant of the prepaid water meters citing that the Harare City Council imposed the implementation on them and thus

they feel deprived of their citizenry rights. Hence, the study confirms that the implementation of prepaid water meters in the absence of public participation from the Harare residents would be illogical.

It is substantial to acknowledge that this research lays a platform for potential research on prepaid water meters in Zimbabwe by citing that a portion of the residents is not simply being intolerant. However considering that a greater population of the residents have households that have more than five members, which implies that prepaying for water for a bigger household will involve extra budgeting which the residents were never debriefed about. Hence, the study is recommending that the Harare City Council consults the residents from within their designated residential areas because there is a great disparity in the living dynamics between the low density, medium density areas, and high-density areas. Additionally, upon consultation, the City Council should then devise a means test that works best for each residential area based on the availability of income, occupation, household size and living conditions of each residential area.

It is imperative that the Harare City Council takes into cognizance that the nation is currently succumbing to a socio-economic crisis and that the citizens have not been spared from the quandary. This reflects on the feedback from the study which indicates that although 53, 6% of the respondents are formally employed, they do not have access to a consistent supply of cash pending the national liquidity crisis. Additionally, this is a clear indication that in the absence of adequate consultation, PPWM implementation in the embodiment of abrupt disconnection has a plethora of challenges to which residents are exposed to in the absence of potable water supply to which the Harare City Council even confirmed in the study. In the same manner, the United Nations Development Programme (UNDP) recommends that the cost of potable water should not surpass 3% of the family income to ensure its affordability and availability to all (Xie, 2006). Furthermore, this study ultimately concludes that the effectiveness of this tool will only be efficacious with due reflection on all-encompassing stakeholder engagement and pro-poor approaches.

Henceforth, it becomes essential to advocate for the promotion of consultation prior to the implementation of any service delivery mechanism to ensure a continuous flow of the service delivery cycle. Empirical evidence clearly reflects that involving the

public is the crux of public service provision to ensure customer satisfaction and the Harare City Council should ensure that the expected service outcome is accordingly received by the citizens. Thus, Roth and Menor (2003) affirm that understanding the needs and expectations of citizens is a principal influence on service delivery efficiency and this can only be enabled through public participation and adequate consultative forums with all stakeholders in a system. Resultantly, it is against this background that the study concludes that the effectiveness of prepaid water meters is solely dependent upon how the residents perceive them. This implies that if they view prepaid water meters as a punitive measure which is meant to coerce them into payment or if they view them as an inhibiting tool to water consumption, then PPWM's will not seem as sublime as the Harare City Council portrays them, thus rendering them ineffective. Taken together, the observations made in this chapter reveal the perceptions of the Harare residents on the effectiveness of prepaid water meters in Harare. Drawing conclusions from these perceptions would be creating an obscured narrative, without understanding the role that each party plays in the potable water structures in Harare. To that end, the Harare City Council is the service provider and the next chapter explores its nature, by investigating the technical capacity of the City Council in providing potable water to the Harare residents, through the prepaid water meters.

CHAPTER FOUR

PREPAID WATER METERS: COMPREHENDING THE TECHNICAL CAPACITY OF THE HARARE CITY COUNCIL TO MANAGE THEM

4.1 INTRODUCTION AND BACKGROUND OF THE STUDY

The preceding chapter highlighted how the Harare residents perceive the effectiveness of prepaid water meters for potable water provision, citing human rights issues, hence the essence of the Human Rights Based Approach to the study. However, it also becomes essential to understand the nature of prepaid water meters in terms of how they are implemented in terms of the technical capacity needed to manage them. It is critical that one also understands prepaid water meters from the context of the service provider as provided for by the systems theory to service delivery. Thus, this chapter provides a detailed analysis of the technical capacity of the Harare City Council, in managing prepaid water meters given political and economic transitions that Zimbabwe has been undergoing.

Budgetary limitations have been pressuring the public sector in developing nations to initiate other revenue accrual tools of service provision, to ensure sustainable cash-flow within the public service as a system (OECD, 2006; OECD, 2017; Murungweni, 2013). It is however unlikely that some of these revenue accrual service provision tools have not essentially provided solid solutions to the quandary of challenges within the public service (Mudzingwa, 2015). The reason is that some of these new improvised tools fundamentally require a certain level of technical and financial capacity which the public sector in most developing nations is still struggling with (GOB, 2012; Njoh, 2003). This essentially means that public service providers should continuously devise sustainable strategies to enable effective, efficient and economic service provision to the public (Cloete, 1994; Zhou, 2013). Chatiza (2016); Mapuva (2007); Nhede (2012) confirm on the public sector being a major service provider in most developing and developed nations, thus any policy implementation explicitly impacts the masses of humankind and it is essential that the public service has the technical capacity relevant, prior to implementation. Cloete (1994); Chirisa (2013); DFID (2015); Hove and Tirimboi (2011) also confirm on how the public sector

should increasingly aim to keep redefining its role whilst retaining its capacity to undertake its role as an efficient and effective service provider to the masses of the public.

However, the public service providers can only be in a position to accomplish their mandate by being aware of the needs of the public to ensure there is value for money in the quality of services for both parties (UNDP, 2004; Zhou, 2012). Hence, this study avows that the core of public service provision should be derived from the manifestation of citizenry oriented service provision tools, which factor in both the dynamics of the public as users and payers of services, whilst being cognizant of the capacity of the service provider to undertake their obligations (Chikozho, 2006; Kayaga, 2008; Nhapi, 2009). Mtisi and Nicol (2003); AFDB (2011); Jonga and Chirisa (2009) affirm that the capacity to manage and provide public services is central in ensuring the socio-economic development of humankind for both developing and developed nations. However, ensuring value for money in public service applies to both parties because striking a balance between the unlimited needs of the public and the limited resources of the public sector entails restricting national budgetary requirements (OECD, 2017). The economic status of Zimbabwe is presently succumbing to structural challenges with regards to infrastructural provision and maintenance and this has a direct causal effect on its technical capacity to implement the meters. Additionally, the city has continuously been besieged with financial struggles pending the current socio-economic status of Zimbabwe being catalogued as a “Failed State” on the Global Foreign Policy’s Failed States Index (Nhema & Zinyama 2016). Equally, Zimbabwe’s economic volatility for the past two decades has incessantly hampered the Harare City Council’s capacity to deliver basic public services and the capacity to essentially govern itself as a public service provider (Mudzingwa, 2015; Matabvu, 2016). The plight of the financial struggles is also being escalated by the urban population growth, which is further placing the city council under tremendous pressure to deliver services under a tumultuous financial status WB (2015); Xie (2006); WB (2016).

The dollarization of the Zimbabwean economy post-2009 witnessed a significantly stable economic growth, which is however not sufficient enough to sustain revenue accrual for consistent service provision for the public sector (DFID, 2015; OECD,

2017). Arguably, the Harare City Council maintains that water revenue inflow falls short in funding the potable water reticulation system due to non-payment by the public and their argument is that prepaid water meters will provide some reprieve by ensuring payment for services (Nhema & Zinyama, 2016; Chirenda, et al., 2015). The Harare City Council further advances that prepaid water meters will then promote the consciousness of accurate budgets because conventional meters have been producing insecure revenue inflow due to estimated bills and non-payment (Chatiza, 2016). Mudzingwa (2015) maintains that the Harare City Council is underpinned by endless financial challenges which are resulting from institutional incapacity in the operation and management of the potable water infrastructure. Thus, being conscious of the fee of a prepaid water meter is a staple factor since the cheaper post-paid metering system is decrepit and has not been copiously restructured post-1980 (Mudzingwa, 2016). Likewise, it is cognizant of how the Harare City Council intends to financially sustain the new highly priced prepaid water meters, given their financial and technical incapacity to maintain the cheaper post-paid meters.

Given this context, the main objective of this chapter is to investigate the technical capacity of the Harare City Council authorities in providing potable water through prepaid water meters in the context of the varying legislative frameworks of water service provision in Zimbabwe. This investigation is enabled by an elaboration of the situational analysis of the Harare City Council in sustaining the prepaid water metering system. This was done to give insight into the changes that prepaid water meters will present to the Harare residents as the user and the Harare City Council as the service provider. This chapter investigates the technical capacity of the Harare City Council authorities in providing potable water through prepaid water meters to the residents in the context of the varying legislative frameworks of water service provision in Zimbabwe. An elaboration of the situational analysis of Harare City Council in sustaining the prepaid water metering system is also undertaken in this chapter. This was done to give insight into the changes that prepaid water meters will present to the Harare residents based on its technical capacity.

4.2 INTRODUCTION OF PPWM's BY THE HARARE CITY COUNCIL

Chatiza (2016) affirms that the inception of prepaid water meters by the Harare City Council has been ideally motivated by various factors amongst which are cited below:

- Non-payment of bills
- Poor revenue collection system
- Success of the prepaid electricity meters with ZESA Holdings
- Revenue accrual for infrastructural resuscitation

This study asserts that the Harare City Council is owed huge amounts of money by the residents, commercial industries and even from within the national and provincial governments (Hove & Tirimboi, 2011). Furthermore, the Harare City Council argues that non-payment of bills by residents has led to a poor revenue collection system which has ultimately foreseen the reduced cash-flow to sustain continuity in potable water service provision (Murungweni, 2013). This essentially implies that the Harare City Council is failing to sustain the potable water infrastructural system due to a financial crisis which is also coupled by institutional maladministration, thus pointing to its lack of technical capacity as a service provider. The Harare City Council also acknowledges that as a system they are yielding to an infrastructural breakdown which is affecting their efficiency and effectiveness in delivering potable water supply to the public (CHRA, 2015). Resultantly the raw treatment infrastructure is also in need of refurbishment due to limited revenue to execute water reticulation and this has led to the delivery of low-quality potable water to the public (Chatiza, 2016).

In the worst of situations infrequent delivery of potable water basically, affects the water quality due to corroded and rusty pipelines which is evident in the water which is not fit for human consumption (Machingauta, 2010; Nhapi, 2009). Consequentially, Gambe (2013); Mudzingwa (2013) confirm that the financial situation has basically placed the Harare City Council in a position where it has no other option but to coerce the public as rate-payers into a culture of paying for service through the implementation of prepaid water meters. However, residents have not been receptive to the inception of prepaid water metering arguing that prepaid water meters will negate the human right to water amongst other factors like

water privatization and an inability by the service provider to efficiently sustain the complex and expensive meters (Chadamoyo & Musingafi, 2013; Nhema & Zinyama, 2016). The residents also maintain that Harare City Council is characterized by continuous water rationing schedules which advance to the absence of potable water and there is a prevalence of leaking pipes. Thus, the residents argue that there is no guarantee that the implementation of prepaid water meters will inexplicably dissolve all these contestations, due to the City Council's lack of technical capacity.

4.3 SITUATIONAL ANALYSIS OF THE CITY OF HARARE

The instituting of the Union Jack at the Harare Kopje in 1890 by the British South African Company's (BSAC) pioneer column led to the genesis of the city of Harare (GoZ, 2010). Originally the city was named Salisbury after the previously British Prime Minister who was named "Lord Salisbury" and it was during a period at which service provision was racially divided based on the colonial rule (Chirisa, 2013). The city was only named Harare upon the independence of Zimbabwe in 1980 and it became recognized as a section of government. The City of Harare has a land expanse of 872 square kilometers and the (Census, 2012) had projected a population of approximately 1 800 000 people in 2015 and the (UN Habitat, 2009) anticipated that the figure would rise by 3.54% on an annual basis to 2 337 000 people by 2025. Likewise, Demographia World Urban (2016) confirms that the average total population of Harare is 2 123 132 people out of the 13 061 239 of the population of Zimbabwe.

The current potable water supply structure has six thousand kilometers of cast iron pipes water and as of 2012, only 200 kilometers of these cast irons pipes had been overhauled with polyvinyl chloride pipes which are cheaper, of lighter weight and not corrosive (CHRA, 2015). The cast iron pipes are more vulnerable to damage since they are easily corroded due to ground expansion and shrinkages during the rainy period and after the rainy periods (Nhapi, 2009). Consequently, due to their corrosive component, these cast iron pipes have been gradually succumbing to dilapidation which is, unfortunately, leading to non-revenue potable water from burst water pipes (Nhapi, 2009). Hove and Tirimboi (2011) also reiterate that Harare City Council yields to non-revenue potable water of about 40% to 50%, which has adverse effects

on the already palpable potable water challenges. Harare City Council's potable water infrastructure was fundamentally intended to supply an average population of 350 000 people, (Census, 2012) espouses that through sizable amounts of restructuring the system can now supply water to only 1.5 million people. This implies that due to overpopulation, the potable water needs of over a million surplus residents are not being met by the decrepit infrastructural structures in its current capacity (Chirenda, et al., 2015).

4.4 LOCAL GOVERNMENT: A BRIEF HISTORICAL BACKGROUND

Chiriseri (2013) confirms that the history of local government in Zimbabwe can be traced back to the colonial era in 1890 and ultimately to 1891 with the genesis of the Board of Management (BOM) which gave effect to the budding town of Salisbury with the trickling in of white settlers. The BOM basically comprised of four board members who were elected and three board members that were appointed by the BSAC (Chiriseri, 2013). In 1892, the Sanitary Board then succeeded the BOM after legal effect was executed from the Town Management Ordinance. In 1897, Salisbury approved a municipal status with exclusively designated councils by the Municipal Ordinance. Mapuva (2007) notes that the BOM constituted of River Boards whose membership was solely centered on the holders of water rights and as a result representation of the board membership was skewed. Chiri (2014) avows that, membership within the River Boards was drawn from within individuals who had rights within town councils, manufacturing industries, commercial agricultural industries and mining industries.

As a result, Mtisi and Nicol (2003) affirm that the establishment of the River Boards was targeted at excluding Black Africans from any form of participation in the Local Government affairs because they were not allowed to either possess water or land rights. The greater population of Black Africans did not have access to acquiring title-deeds to land, which essentially implied that they were excluded from any decision making processes with regards to water for domestic and commercial use (Chiriseri, 2013). Furthermore, Mapuva (2007) asserts that local government and public service provision during the colonial era was racially divided, thereby excluding black people from accessing the benefits of local governance. Conversely, there were continuous attempts to enable service provision that was inclusive of the black people and this

was done through the formation of the Advisory Boards, which were meant to solely advise white municipal officers. Succeeding legislative frameworks continued to alienate black people from accessing public services, however, 1980 marked the advent of independence for black people who now had the freedom to vote and be voted in as councilors and mayors (Chiri, 2014).

4.5 OVERVIEW OF URBAN POTABLE WATER SUPPLY

This study affirms that the historical contraction of raw and fresh water sources has continuously besieged urban water supply departments that yield in failure to sufficiently achieve potable water demands. In the same light, Zimbabwe is a semi-arid nation which heavily relies on steady rainfall patterns which are generally evident from November to April annually (Jonga & Chirisa, 2009). Given the perennial rainfall patterns, Zimbabwe has made significant progress towards the refurbishment of dam construction, while the use of yearly rainfall, falls just above an average twenty-two percent to sustain raw water sources for potable water supply (DFID, 2015). During the period 1980-2000, Zimbabwe registered a 100% coverage growth in urban potable water supply and sanitation services and was renowned for being a global trailblazer in urban water supply services among developing countries (Musingafi and Chadamoyo, 2013; Makwara, 2011). During the year 2000 an average 85% of the population had access to potable water but by the year 2008, only 74% had access to potable water, which has gradually decreased due to the cataloging of Zimbabwe as a “failed state” (Nhema & Zinyama 2016). Musingafi and Chadamoyo (2013) observed that during these two decades, urban population inclined from 1.6 million to 4.2 million and the City Council authorities properly prearranged for urban resettlement to ensure the provision of clean potable water.

Similarly, Zimbabwe was globally reputable for being a trailblazer in innovation within urban water service provision in the early 1990's and as a result, it had highest levels of urban water supply coverage in the entire Sub-Saharan Africa (WHO, 2012). (Nhapi, 2009) also echoes the same sentiments that during the period of 1990-2000's, the quality of public service provision in Zimbabwe was highly rated in the Sub Saharan Africa. However, Mtisi and Nicol (2003) also avow that post-2000's were evident of deterioration in the quality of potable water supply as well as a decline in the number of households that had access to potable water supply.

Furthermore, AFDB (2011) concedes that a decline in service provision in Zimbabwe can be easily attributed to lack of technical capacity to maintain and refurbish the existing potable water network system and ensure consistent cash-flow from revenue. Essentially, during that period (pre-2000), Harare City Council was able to supply potable water to every residential area because they efficiently planned and managed for urban settlement and urban water supply and sanitation (Murungweni, 2013; Chinamora, 2002).

Conversely, the Harare City Council's inability to strike a balance with the rate of urban population growth against the dilapidating infrastructural set-up has been evident on its incapacity to cope with the demand of urban potable water provision (Gambe, 2011). Matabvu (2016) asserts that some of the factors that have had a causative link on the collapse of urban water provision of the Harare City Council range from limited structural investment, inadequate revenues and the lack of technical capacity to sustain water governance policies. Simultaneously, the collapse of the urban water provision system led to a decline in revenue collection which further worsened the operations of the Harare City Council as a system (DFID, 2015; OECD, 2006). Xie (2006) iterates on the significance of revenue in public institutions that deliver amenities because it is the lifeblood of the service provision cycle. Thus, it is imperative to note that failure to reinvest in the potable water infrastructure has continuously led to the perpetual dilapidation of the existing structure, which has had adverse effects on the residents. As aforementioned, the adverse effects of the decline of the potable water infrastructural set were palpable with the 100,000 cases of cholera and about 4 280 deaths that resulted from the cholera outbreak during the years 2008 to 2009 (OXFAM 2011). This clearly indicates the essence of potable water on socio-economic development of humankind as a healthy population. Thus, reiterating on the necessity of the ability of Harare City Council to have technical capacity in administering prepaid water meters to ensure the human right to water is not negated in the process, while the service provision cycle is retained.

4.6 THE EFFECTS URBANIZATION ON POTABLE WATER SERVICE PROVISION

WB (2015) defines failed states as “those where the state in power is unable and unwilling to deliver core functions to the citizens in terms of security, protection of property rights, basic public services and essential infrastructure”. Fesler (1968) also defines a failed state as “one wherein the government cannot or will not provide an environment for households to mitigate or cope with poverty and other risks to human well-being”. Against the background of these definitions, this study argues that the government of Zimbabwe is presently in a state of a breakdown in its socio-economic and political facets. The Mugabe administration in the post-1980 era was primarily meant to epitomize an idyllic that upheld the effective public management and governance of Zimbabwe but regrettably, the state is now incapacitated due to prevalent government corruption and economic failure (Gambe, 2013; Mudzingwa, 2015).

The study maintains that maladministration is directly linked to the failure of the state, hence the core of the study was to analyze the efficacy of prepaid water meters in the frame of a failed state. In light of Zimbabwe as a failed state, prepaid water meter implementation is not just about water commoditization, hence it was more instructive to analyze prepaid water meters from the insight of both the public and the local authorities. Zimbabwe’s cataloging as a “failed state” is undeniable because the country ranked number 16 on the Global Foreign Policy’s Failed States Index of 2016 after scoring 100.5 (Nhema & Zinyama 2016). Numerous influencing factors amongst them, corruption, poor governance, maladministration and poor financial management have enabled this depiction which has ultimately contributed to the water and sanitation crisis (Matabvu, 2016; Chirenda et al., 2015; Kayaga, 2008). Prepaid water meters are complex and expensive to implement and being mindful of this factor in the context of Zimbabwe as a failed state in the implementation of the new meters is crucial. Mapedza and Geheb (2010) assert that developing states have been yielding to service delivery fragmentation as inherited from the colonial rule which did not represent sustainable socioeconomic service delivery patterns. Hence, the experiences illustrated in the literature are a clear revelation that developing nations are still succumbing to service delivery challenges. However, substantial differences are observable, there are merits that can be

proffered by prepaid water meters and these merits can only be fully cultivated if the appropriate dynamic factors towards the technical capacity of the Harare City Council are addressed.

Resultantly, an ultimate 80% of the diseases in Sub-Saharan Africa have a direct causal link on the lack of potable water (Demographia World Urban, 2016; JMP, 2017). The International Water Association (2004) espouses that urban water service provision is hastily declining for developing countries and Zimbabwe has not been spared by the plight which the International Water Association attributes to over-urbanization and the lack of technical capacity by the service providers to nip the problem in the bud. The potable water crisis is most evident in low-income areas, most of which have not received piped potable water supply for over a decade (Matabvu, 2015; Matabvu, 2016). Gambe (2011) asserts that the upsurge of the urban population in developing nations that lacks access to potable water supply due to failure by the service providers to restructure the infrastructure is apparent. WHO (2015); WHO (2010); Xie (2006) confirm on how lack of potable water access consequently exposes urban households to waterborne infections, which are credited for having a strong causative link between the infant mortality rates in developing nations.

Thus, JMP (2017) confirms that three in every 10 urbanites lack access to potable water supply, and this study argues that prepaid water meter implementation will only worsen this situation if safety nets are not devised for the low-income urban households. It is also essential to note that, regardless of urbanization, Harare City Council is also yielding to poor governance, ineptitude, maladministration and financial mismanagement (Gambe 2011; UNDP, 2004). Maladministration within the Harare City Council has led to the recurring spirited resistance of the prepaid water meters by the residents who are arguing that they have no confidence in the service provider; hence their hostility towards prepaid water meters would probably be rational. Consequently, it becomes commendable to note that, pending prepaid water meter implementation, the Harare City Council should incorporate participative and consultative potable water governance in ensuring the needs of every relevant stakeholder is basically incorporated (Gambe, 2013; Chaminuka and Nyatsanza, 2013; Chirenda, et al., 2015).

4.7 SERVICE DELIVERY LEVELS

From a service delivery perspective, Moriarty et al., (2010); Schouten et al., (2011) acknowledge that there are five levels of service delivery which are noted below:

I. No service level

The “no service” level is apparent in the public sector when there is a failure to meet the smallest of service delivery components by the service provider, thereby disregarding the quintessence of “basic service delivery”.

II. Substandard service level

The “sub-standard service” level becomes evident when there is a failure to meet the fundamental but minute objectives, which are described as better than no service at all. Gambe (2013) typically describes the “sub-standard service” level as the buffer zone between the “no services” and “basic service” levels, thus making this level an archetypical of public services accessible to residents in the slightly improved areas.

III. Basic service

The distinction of the “basic service” level lies in its difference between the “substandard service” level and “intermediate service” level, which is apparent in the reflectiveness of the former level in rural areas. “Basic service” levels are more evident in Peri-urban communities which are more communally managed and primarily dependent on the provision of the basic level of potable water. Resultantly water for other uses is established from other sources since their supply of potable water is greatly contingent on underground water quality.

IV. Intermediate level service

“Intermediate service” levels are more eminent in smaller communities which have better access to basic amenities for their households, which make this level more expensive because there is a requirement for payment to gain access to better services (Moriarty et al., 2010; Schouten et al., 2011).

V. High-level service

The “high service” level encompasses access to a continuous supply of quality potable water directly into personal households through public or private bodies as water service providers which are sustained by the setting of tariff structures (Moriarty et al., 2010; Schouten et al., 2011).

4.8 CORE COMPONENTS OF SERVICE DELIVERY

The success of service delivery is dependent upon various components and this section seeks to highlight the significance of those components and their relationship to prepaid water meter implementation for potable water provision in the Harare City Council (CHRA, 2015).

4.8.1 Stakeholder involvement in policy making

Stakeholder involvement is crucial in policy making and it is essentially that which has a major impact on the residents as exemplified by the dynamics surrounding prepaid water meter implementation. Thus, this fundamentally begins with identification and acknowledgment of who the relevant stakeholders are to ensure efficient and effective service delivery. In the case of the Harare City Council, this study acknowledges the relevant stakeholders to be inclusive of the Harare residents, Harare residents associations, Non-Governmental Organizations, professional bodies, academia and other government institutions. Acknowledging the relevant stakeholders also entails incorporating them in the integration of the merits and demerits of a service provision tool or policy inter alia to warrant satisfaction from the service provision structure. The Harare City Council could have conducted public opinion polls and forums with the public and relevant stakeholders prior to prepaid water meter implementation to ensure that residents were inclusive in being part of the solution to the potable water crisis.

Gambe (2013) maintains that the relevant stakeholders in the service provision cycle were never directly involved in relation to prepaid water meter implementation. This study further argues that the Harare City Council is not cognizant of involving the beneficiaries of the prepaid water meters because they are aware that they do not have the technical capacity to undertake them and residents are resultantly being repulsive. Stakeholder involvement within the Harare City Council is also enabled through residents association such as the Harare Residents Association, CHRA and the Community Water Alliance. The Institute of Water and Sanitation Development asserts that stakeholder involvement in Harare is poor by noting that,

“water supply in Harare is a sensitive issue that is not to be openly discussed and civic organizations are not even allowed to undertake water quality tests because the

council fears we might advise residents on how poor the water quality is” (CHRA, 2015).

4.8.2 Public consultation

Public consultation is a critical component of service delivery because it helps create a direct contact between the residents and the Harare City Council, thereby dissolving the element of residents being isolated from the service provision cycle. Public consultations are essential tools that enable the identification of problems within service provision and they ultimately encourage residents to be willing to partake in the solution finding process (Chirenda et al., 2015). Furthermore, public consultation warrants citizen satisfaction since the public contributes to the crafting of their service delivery priorities to be undertaken by the service provider. Chikozho (2006) notes that consultation of water users by the water service providers should be much easier in modern-day bearing in mind the technological advancements. This simply implies that in this electronic era, even the internet can be easily harnessed to openly consult and inform the public on the potable water quandary. Aside from the internet, the Harare City Council can also effectively utilize other platforms such as the radio or television to involve the public in the public consultation cycle to involve the residents on a wider coverage.

Conversely, public consultation equips the residents with a sense of responsibility which evolves from the sense of being involved through the active participation (Kayaga, 2008). The public consultation also places pressure on the service provider in creating a sense of responsibility to improve service delivery according to the needs of the public. Unfortunately, the Harare City Council did not take advantage of all these platforms to ensure comprehensive stakeholder engagement and the effects are evident on the spirited resistance of the prepaid water meters from the residents. Chikozho (2006) advances that lack of public consultation actually has detrimental effects on the ability of the service provider to effectively and efficiently deliver potable water services without facing resistance from the public.

4.8.3 Transparency and right to information

Nhapi (2009) espouses that, stakeholder involvement in policy making and public consultation are essential components to ensuring transparency and the right to

information in the public service provision cycle. Hence, this study confirms that public participation ultimately results in the development of transparent platforms between the public who have the right to information from the service providers. Resultantly, transparency increasingly ignites enthusiasm from the residents to participate in the service provision cycle since information with regards to the service provision cycle is made available to them (Kayaga, 2008). The Harare City Council can promote transparency through making budgetary frameworks and intended policy plans and decisions available to the public because they have a right to the information as ratepayers and service users.

4.8.4 Citizens' satisfaction

The satisfaction of citizens by the level of service delivery fundamentally culminates and ultimately escalates with a derivation from the three components aforementioned. This implies that citizenry satisfaction can be enabled through the improvement in rationalizing public service processes to be more integrative of the public as the service users and relevant stakeholders. The central idea is that once citizens are satisfied, they are willing to be more involved in the service delivery cycle and they become responsible ratepayers or citizens *inter alia* (CHRA, 2015). Apart from that, it is also necessary to note that once residents develop a level of trust in the public service, their involvement in the potable water supply channel increases while at the same time promoting effectiveness in service delivery. Equally, this study acknowledges that Harare City Council should, therefore, strive for public consultation and stakeholder involvement which is representative of the relevant stakeholders to ensure solid citizen satisfaction.

4.9 FINANCING LOCAL GOVERNMENT IN ZIMBABWE

CHRA (2015); Cloete (1994) note that the public service in most developing nations has been struggling to make basic services available to the public and hence their challenges are embedded in their failure to maintain the decrepit infrastructure which is constantly malfunctioning. OECD (2017), notes that financial resources are the lifeblood of the public service; hence they are significant in ensuring the attainment of service delivery objectives and operational expenditure. In the same light, public service reforms should enable the legislative frameworks which clearly espouse on

municipal finance management and revenue mobilization. Thus, the World Bank (2007) maintains that "local government has the power to adequately manage its own fiscal revenues and expenditures, subject to national framework conditions." The World Bank (2007) also confirms that local government structures are "desired and natural outgrowths of trends towards fiscal decentralization, which are intended to reduce central government control in favor of local preferences."

This ultimately implies that revenue from service delivery is derived from income accrued through the delivery of potable water, refuse collection, waste-water management and provision of municipal health-care services among other amenities. Hence, the public service is strongly dependent upon property rates and taxes from the citizens in sustaining the service delivery cycle such that Xie (2006) confirms that "property rates constitute between 30 percent and 40 percent of the total revenue for the public service." It is unfortunate that the persistent socio-economic crisis in Zimbabwe has limited the revenue accrual channels for the public service and they have been driven to rely on other alternative yet unsustainable sources of revenue accrual. The public sector has mostly been responsible for potable water provision and the quality of service provision has been persistently underpinned by various inefficiencies amongst which is lack of technical capacity which has ensued into the inability to sustain service provision (GWP, 2000).

Matabvu (2016) confirms that, despite being reliant on other avenues of revenue accrual, the Harare City Council constantly yields into budget shortfalls due to dilapidated infrastructure which gives a platform for estimated billing and non-revenue water. Likewise, the current socio-economic crisis in Zimbabwe has not made it any easier for the residents, who have also been constantly defaulting payments for rates and services such that the Harare City Council has been failing to achieve its service delivery targets (Gambe, 2013; Nhema and Zinyama, 2016). Hence, due to the budget shortfalls, the Harare City Council is arguing that the implementation of prepaid water meters is plausible as a consistent revenue accrual tool which is much more accountable and transparent. This study also argues that the credibility of the efficacy of prepaid water implementation by the Harare City Council is also heavily reliant upon its technical capacity to administer the meters.

CHRA (2015) confirms how the Harare City Council has persistently been yielding into service delivery contestations and it also affirms that these contestations rank in order of finance, technical capacity, and equipment and machinery stocks. The World Bank (2007); OECD (2006) also confirms that revenue mobilization challenges are also inherent where there is an ineffective financial management structure, which is borne through lack of skilled and qualified staff with adequate technical capacities. This study also maintains that, with regards to budget shortfalls, the “crumbs of revenue” which the Harare City council might accrue through prepaid water metering will be diverted towards payment of wages with little or no revenue being directed towards infrastructural development.

4.10 PUBLIC SERVICE REFORMS IN THE WATER SECTOR IN ZIMBABWE

Kayaga (2008) maintains that developing nations have been undergoing through public sector reforms by employing different reforms which are meant to upgrade the efficiency and effectiveness of quality public service. Non-governmental organizations (NGO's) have continuously encouraged the enactment of public sector reforms in developing nations for infrastructural resuscitation (GWP, 2000). Hope (2006) affirms that various sustainable mechanisms have since been gradually proposed and implemented for potable water management in different countries and prepaid water meters are amongst those mechanisms. Thus, Mason (2009) notes that the public sector in developing nations has had to amplify their potable water supply structures by implementing sustainable mechanisms that enable efficient potable water provision. Harare City Council has however been solely dependent upon revenue from ratepayers to sustain itself as a systematic organization and this study notes that public service providers have to devise other sustainable measures through public sector reforms. Chikozho (2006); OECD (2017); GWP (2000) assert that revenue is the lifeblood of the public service cycle and its lack thereof inhibits the capacity of the service provider to efficiently execute its role, especially as a potable water supplier. The other limitation of the Harare City Council is that it is deeply embedded in a politics-administration dichotomous structure which ultimately affects its technical capacity in service provision due to perpetual partisan intrusion (Nhapi, 2009; Murungweni, 2013).

This study notes that prepaid water meters as public sector reforms have had merits which have been obscured by several demerits due to a number of factors which include technical capacity, financial capacity and socio-economic context of the country (Matabvu, 2016; Abu-Hilou & Jarrar, 2010; Von Schnitzler, 2013; GOB, 2012). This study further affirms that public service reforms are essential because inept public service has adverse effects on the public who are at the receiving end of the public service delivery cycle because it affects the quality of services they receive. Likewise, failure to successfully implement the formulated public service reforms also has lasting severe effects on the public if the service provider does not essentially have the technical capacity required to execute. This simply implies that the Harare City Council should employ prepaid water meters for potable water provision by being cognizant of their technical capacity to fully administer the tools, without treating the residents as “guinea pigs”. Thus, public consultation and stakeholder involvement become essential because it is the low-income residents who have no alternative means of survival who bear the brunt when the service provider fails to capitalize on a failed public service reform.

4.10 LEGISLATIVE FRAMEWORKS ON WATER SERVICE PROVISION IN ZIMBABWE

The year 1980 marked the achievement of political independence in Zimbabwe and this ushered in local government reforms in terms of legislative frameworks governing the public service. Kayaga (2008); Cloete (1994) provision that, “legislative frameworks should be used as guides to measure progress in promoting administrative autonomy, fiscal autonomy, public property rights and decentralization of services”. This is an indication that legislative frameworks are yard-sticks through which the quality of public service is framed from and hence they should be well formulated and implemented. CHRA (2015) espouses that there are five central pieces of legislative frameworks that govern local government in Zimbabwe and these are District Councils Act (Chapter 29:13), Urban Councils Act (Chapter 29:15), Provincial Councils and Administration Act (Chapter 29:11), Regional Town and Country Planning Act (1976) and the Traditional Leaders Act (2000). CHRA (2015); Chiri (2014) also mention that these pieces of legislation must essentially be integrated with the Constitution (2013) into a consolidated document which governs

the institutional framework of urban councils. Chinamora (2002) also asserts that the potable water crisis in Zimbabwe is divided over excess pieces of legislative frameworks which are not essentially well-coordinated. Thus, Mudzingwa (2015) discerns that legislative frameworks governing potable water in Zimbabwe are relentlessly incoherent and thereby lacking coordination in areas of responsibility.

Hence, it is rational for this study to argue that the Harare City Council does not have the technical capacity to effectively administer prepaid water meters, given the predicament with entangled and skewed legislative frameworks. Chinamora (2002) further argues that lack of coordinating legislative frameworks is not the only challenge underpinning the Harare City Council, but the fact that there is no consolidated policy framework which provides for potable water provision in Zimbabwe. The Water Resources Management Strategy Steering Group Report concedes that the mandate of legislative frameworks in Zimbabwe is to promote access and affordability of potable water for all, to encourage stakeholder participation in decision making and to provide guidelines for potable water supply (GoZ, 1999).

Given this background, Nhapi (2009) confirms that Zimbabwe National Water Authority (ZINWA) was created “to improve national and regional planning, and to reduce government expenditure in the water sector through the levying and sale of water”. Thus, ZINWA was formed as a self-funding national parastatal through the establishment of the National Water Authority Act (11 of 1998) (GoZ, 1998). The formation of ZINWA is a clear indication that potable water infrastructural systems have been state-owned for a long period post-1990 and has also resultantly dilapidated at the hands of the state post-2000 (Mtisi & Nicol 2003). Hence the justification of this study that the technical capacity of the Harare City Council to sufficiently undertake the prepaid water meters is still obscured by a lot of factors is acceptable.

4.11 SERVICE DELIVERY CHARTER (SDC)

The Service Delivery Charter for the Harare City Council governs the entire administrative area of Harare, which is the capital and largest city of Zimbabwe (Chiri, 2014). The Mission statement of the Harare City Council which is embedded within the Service Delivery Charter maintains that the service provider exists to administer the council area and to provide social services by facilitating the provision of other social services by other actors such as NGO's to the citizens (CHRA, 2015). The Service Delivery Charter confirms that the Harare City Council carries out a strategic plan set in between the years 2012 to 2025 and it envisions that Harare should be a "World Class City" with residents enjoying "World Class Services" (Harare, 2016). The Service Delivery Charter also confirms through the strategic plan of the Harare City Council that it is the role of the service provider to ensure that a "reliable potable water system is made available, 24 hours a day, seven days a week and 365 days a year" (Harare, 2016).

One of the major objectives of the Strategic Plan 2025 is to ensure that Harare City Council becomes a responsive government with quality leadership, an efficient and effective management system whose staff is competent and motivated to deliver appropriate and timely services. In order to achieve this vision, the Harare City Council has begun to reinvent itself through among other things, restructuring itself to focus on service delivery through correct systems and processes. Prepaid water meter implementation is amongst the restructuring process, which is meant to ensure value for money by promoting a culture of payment from non-paying citizens. However, Jonga and Chirisa (2009) maintain that Harare City Council has failed to intensify performance-based management to improve accountability in ensuring the citizens have a closer working relationship with the service provider. Likewise, Harare City Council also lacks a robust human capacity development structure to ensure the alignment of the precise competencies of a customer-oriented human resource that is able to manage and effectively administer prepaid water meters (Chiri, 2014; Jonga & Chirisa, 2009).

4.12 THE CONSTITUTION OF ZIMBABWE (2013)

DFID (2015) notes that “the formal constitution of the state should in principle provide the ultimate legal frameworks through which rational legal behavior is defined and it is not to be used as a punitive measure against citizens.” However, DFID (2015) further notes that “constitutions lay down the overall nature and the characteristics of political institutions in elaborate detail, and hold promises of institutionally guaranteed civil liberties and political democracy”. Hence, the (Constitution of Zimbabwe, 2013) is fundamentally the highest law in Zimbabwe and every other single piece of the legislative framework should conform to it (CHRA, 2015). Chapter 4, Section 77a of the (Constitution of Zimbabwe, 2013) asserts that water is central to human life and dignity; while section 77b notes that every individual has the “right to safe, clean and potable water and that the State must take reasonable legislative and other measures, within the limits of the resources available to it, to achieve the progressive realisation of this right”.

Mapuva (2007) also asserts that the provisions of a constitution are inclusive of civil and political rights to which every citizen is essentially entitled to, regardless of religion, race or political affiliation. Hence section 44 of the (Constitution of Zimbabwe, 2013) notes that it is the duty of the state to respect fundamental human rights and freedoms by affirming that “The State and every person, including juristic persons, and every institution and agency of the government at every level must respect, protect, promote and fulfil the rights and freedoms set out in this Chapter.” Furthermore, this study argues that prepaid water implementation is in direct contradiction with the Constitution (2013) since failure to prepay for potable water would lead to the human right to water being nullified. Hence it is fundamental to determine the technical capacity of the Harare City Council in addressing the potable water challenges underpinning the council without nullifying the citizens’ human rights to water.

4.13 ZIMBABWE AGENDA FOR SUSTAINABLE SOCIO-ECONOMIC TRANSFORMATION- ZIMASSET (OCTOBER 2013- DECEMBER 2018)

ZIMASSET was preconceived from the ruling party's Zimbabwe African National Union-Patriotic Front political manifesto as an "economic blueprint" which was meant to drive its campaign initiative on a long-term basis (Murungweni, 2013; ZIMASSET, 2013). It was birthed from the party's manifesto as part of its long-term development agenda. The plan was ultimately implemented as a government policy reform, following the subsequent win of Zimbabwe African National Union-Patriotic Front in the 2013 presidential elections. Likewise, this study affirms that ZIMASSET is essentially a plan which was conceived to recover the country's collapsing socio-economic status. ZIMASSET makes an intrepid affirmation that it will be a citizen-centered government that upholds the promotion of equitable development and prosperity (Constitution of Zimbabwe, 2013). Subsequently, the Social Services Cluster of the ZIMASSET pledges to undertake programmes to expand access to potable water (ZIMASSET, 2013). However, not long after this declaration was made the government of Zimbabwe introduced the prepaid water meters, which the residents are being hostile to, citing that the meters are not citizen-oriented.

4.13.1 Objectives of the ZIMASSET

The main objective of the ZIMASSET is to achieve sustainable socio-economic transformation the four clusters detailed below (ZIMASSET, 2013).

- Food security and nutrition
- Social services and poverty reduction
- Infrastructure and utilities
- Value addition and beneficiation.



Figure 23 ZIMASSET Thematic clusters

Source: Own Illustration (2017)

The diagrammatic representation articulates the four main thematic clusters of the ZIMASSET, which are also its key objectives (ZIMASSET, 2013). This study specifically illuminates on the second and third cluster of the ZIMASSET as essential clusters to this study, in exploring the technical capacity of the Harare City Council to administer prepaid water meters without negating the human right to water. The fundamental basis of the second cluster (Social services and poverty reduction) is to empower the state to develop the socio-economic conditions of the citizens in the promotion of an empowered community (ZIMASSET, 2013). However, the implementation of prepaid water meters would be a diversion from their mandate espoused in the ZIMASSET in ensuring the socio-economic advancement of the citizenry, particularly the low-income residents, whose access to potable water will be restricted. The third cluster (infrastructure and utilities) is harnessed from the collapse of public infrastructure pending the cataloging of Zimbabwe as a “failed state” on the Global Foreign Policy’s Failed States Index of 2016 after scoring 100.5 (Nhema & Zinyama 2016). Thus, the third cluster gives providence on the mandate of the State to implement public service reforms which enable efficient and effective public service delivery (ZIMASSET, 2013).

Likewise, this study acknowledges that the state should make reasonable progress in ensuring that the Harare City Council has the technical capacity to ensure residents of Harare have access to potable water. The third cluster is also responsible for setting a background which highlights the analysis of the policy

implications surrounding prepaid water meter implementation as an infrastructural development tool (ZIMASSET, 2013). Chatiza (2016) affirms that the third cluster of the ZIMASSET also makes provisions for public-private partnerships as a feasible alternative to funding the potable water structure in the quest for infrastructural and utility refurbishment. Resultantly, Matabvu (2016) affirms that, given the financial crisis underpinning the State, Harare City Council has already begun engaging private bodies in the tendering and installation of prepaid water meters since they are not locally accessible. However, Section 4 of the Water Act (31 of 1998) forbids the privatization of water, which is a conflict of interests with the inception of public-private partnership arrangements espoused on within the ZIMASSET framework. Consequentially, this study argues that the State should implement a piece of independent legislative context which fundamentally highlights on the policy framework of prepaid water metering.

4.14 WATER ACT (CHAPTER 20: 24, ACT NO 31 OF 1998)

The Water Act (31 of 1998) is a fundamental legislative framework which serves to govern the growth and management of water resources and as well as the responsible governing institutions in Zimbabwe (GoZ, 1998). The Water Act (Act 31 of 1998) was established as a modification to the pre-1980 legislative frameworks that were established on a racially divided premise to potable water service delivery (Matinenga, 1999). The Water Act (31 of 1998) is an amendment to the (Water Act, 1976) which was racially established within the colonial epoch in an attempt to exclude the Black Africans from accessing and participating within the decision-making of water affairs. Water Act (Chapter 20, 24) espouses on the consumption and usage of water as a resource that is under the management of local authorities (Kambudzi, 1997; Mtisi & Nicol, 2003). The Water Act (31 of 1998) also gives confirmation for the consumption of water by acknowledging that every citizen of Zimbabwe is rightfully authorized to use potable water for basic and primary usage. However, the use of water for non-domestic purposes has to be charged based on a commercial tariff as allocated by the service provider (Kambudzi, 1997).

GoZ (1998) also outlines that, “Primary usage of potable water, means the reasonable use of water for basic domestic human needs in residential premises; or for the support of animal life, other than fish in fish farms or animals or poultry in

feedlots; or for the making of bricks for the private use of the owner, lessee or occupier of the land concerned; or dip tanks". This simply implies that the Water Act (31 of 1998) gives provision for the residents of Harare to have access to potable water in this study. Furthermore, the 1998 Water Act (Chapter 20: 24) draws vision from the four pillars of Public Administration which are efficiency, effectiveness, economic value and equity in ensuring environmental sustainability of water as a resource, by noting that water is not privately owned. Equally, the state of Zimbabwe retains the rights to surface and ground-water and hence any other use of water for commercial purposes has to be approved by the state since water which is not for primary use is an economic commodity which must be paid for. The implementation of the Water Act of (1998) also saw the genesis and establishment of new institutions like ZINWA which was instituted solely to govern water allocation, consumption and basic water management (Mtisi & Nicol, 2003).

4.15 THE ZINWA ACT OF 1998 (Chapter 20:25)

The subsequent establishment of the Water Act (31 of 1998) resulted in the promulgation of the ZINWA Act (Chapter 20:25 of 1998) upon the establishment of Zimbabwe National Water Authority (ZINWA) as an institution that was responsible for the improvement and administration of water resources. The establishment of ZINWA led to the stripping away of the responsibility for water services from the Harare City Council and this limited its chances of revenue accrual from all the relevant sources of revenue which were now being handled by ZINWA (GoZ, 2008). ZINWA was essentially established to offer water amenities from a profit-making perspective by retaining all the proceeds that would be amassed from every commercial water service. In essence, this meant that the role of commercial water provision which was previously performed by the Department of Water Development was taken over by ZINWA.

The roles and responsibilities of ZINWA range from offering an advisory committee to the Minister of Water Resources and Development in the preparation of national policies or development and management of water resources (ZINWA Act of 1998; GoZ, 2008). It is also the role of ZINWA to ensure the governance of Catchment Councils in accordance with the (Water Act 31 of 1998) for consistent planning and coordination of water resources in catchment areas. This resultantly suggests that

ZINWA reserves the obligation to provide the Catchment Manager with any form of assistance with regards to the Catchment Council (ZINWA Act of 1998). In 2009, the roles and responsibilities of ZINWA to water services were dissolved and powers and functions were reserved within the local authorities but unfortunately service delivery had already significantly declined beyond doubt (DFID, 2015).

4.16 URBAN COUNCILS ACT OF 2015 (Chapter 29:15)

The Urban Council's Act (Chapter 214) of 1973 has since been amended to the new Urban Councils Act (29:15) of 2015 (DFID, 2015). Pre-1980, the Urban Councils Act of 1973 was highly centralized and it was built upon racial division. However, post-1980 beheld the new Urban Councils Act (29:15) of 2015 which provides for the democratization of the local government by eradicating racially determined service delivery in urban areas (Hope, 2006). Consequentially, the amended version of the Urban Councils Act resulted in the amalgamation of the previously excluded black townships into the Urban Council areas. Likewise, the democratization of the local government system also provided lee-way for comprehensive stakeholder involvement in the policy formulation process. Mapuva (2007) echo the sentiments that the amended versions of the Urban Councils Act, post-1980 have facilitated for citizenry engagement in decision making at the grassroots level of public service.

However, this study argues that decision making in the public sector has not been necessarily all-encompassing due to the top-down approach which has led the residents of Harare to be unreceptive to the introduction of prepaid water meters. The Harare City Council Water maintains that it incorporates public participation and citizenry consultation in decision making, however (CHRA, 2015) contends that despite the establishments of public participation within the (Urban Councils Act 29:15) of 2015), the incorporation of a participatory budget framework is unavailable. Chinamora (2002) argues that the top-down approach can be tangible in Zimbabwe since the "government officials have the information on what resources the national government will make available for policy implementation, hence they are justified to make critical decisions without involving the public". This study contends this to be irrational because the Harare City Council is a system which has various inputs that are processed to produce substantial outputs (Porter-O'Grady *et al.*, 1997).

Niklas (2013) confirms how the accomplishment of goals by the system is mainly dependent upon the continuous feedback between the different components of the system. A greater part of these inputs is drawn from the public who are the rate-payers and recipients of the service, thus continuous feedback in a system can only be enabled through constant monitoring and evaluation of the projected policies and procedures by involving the public (Miller, 2007). Gambe (2013); Nhede (2012); Zhou (2013) asserts that local government policies have to incorporate the role of citizens in terms of public participation to ensure that their needs are conveyed through and adequately addressed by the relevant stakeholders. As a result of the failure of Harare City Council to address the needs of the public, Harare residents associations have resorted to lobbying the residents to ignore their roles and responsibilities in paying for services to capture the attention of the Harare City Council (CHRA, 2015; Mudzingwa, 2015; Matabvu, 2016). It is, however, irrational for the residents to evade their roles and responsibilities to pay for services because the Harare City Council is a system which is also heavily reliant upon financial sustainability to efficiently deliver services. It is against this background that this study acknowledges that despite the democratization of the Urban Councils Act in the post-1980 era, local government has not essentially been participatory. Subsequently, it becomes imperative for the Harare City Council to be aware of the needs of the residents in the implementation of prepaid water meters, in comprehending their efficacy for potable water provision.

4.17 MATERIALS AND METHODS

Rosnow and Rosenthal (2008) acknowledge that qualitative research encourages an interpretation of sense, acquaintance, and observations. Kumar (2005) defines quantitative research as an inquiry of a phenomenon enabled by investigating a concept that can only be measured arithmetically and evaluated statistically. This study was advised by the mixed method approach in integrating both qualitative and quantitative research instruments. Triangulation enabled the author to answer the research question from diverse angles. Leedy (2005) maintains that triangulation in research has the ability to support the researcher to depict an objective analysis of the data and findings of the study. The qualitative research method prompted the author to use purposive sampling to select the key informants from the Harare city

council authorities who were in charge of the prepaid water metering implementation process. Purposive sampling was also used in selecting the participants from civil water organizations because they are the catalysts between the Harare residents and the Harare City Council authorities.

The basis for using purposive sampling was to permit the author to select the respondents who have better knowledge on the technical capacity of the Harare City Council in administering prepaid water meters. Alternatively, quantitative research prompted the author to use systematic sampling in selecting the Harare residents because it adopts simple random sampling at the beginning in order to establish a sampling interval which creates a quasi-random selection method. The author identified the first respondent from the Harare City Council registry and the remaining residents were selected using the sampling interval of the 5th element of the whole population from the Harare City Council registry. The estimated representative sample size for the survey was derived from the Raosoft sample size calculator for the maximum variability of the sample based on the population of Harare (Raosoft, 2004).

Dirwai and Gwimbi (2003) note that there is a wide range of data collection instruments that can be used in obtaining data and among these are interviews, intake forms, questionnaires, and documents. Kumar (2005:73) maintains that the selection of these data collection instruments precisely depends on the choice of the research method, the study topic and the availability of data. Hence from this discourse, structured questionnaires were self-administered to 271 Harare residents because questionnaires are most appropriate when establishing a relationship between variables when there is a large sample involved. Face to face and telephonic key informant interviews with ten Harare City Council officials were undertaken to understand their technical capacity in administering prepaid water meters. Two focus group discussions, with each group consisting of ten participants, were held under the guidance of a moderator.

These participants were inclusive of the Combined Harare Residents Association and Harare Residents Trust officials who form the civil organizations that are key catalysts between the Harare City Council and the Harare residents. The author used descriptive statistical methods through SPSS to analyze the findings of the

study as gathered from the structured questionnaires that were administered to the residents. Content analysis was used to analyze the focus group discussions and the interviews because it gave a descriptive presentation of data (Bak, 2004). Thematic analysis was ultimately used in discussing the common and recurrent themes from the data gathered.

Table 4 Designation of respondents

DESIGNATION OF RESPONDENTS	TARGETED RESPONDENTS	INSTRUMENT	ANALYSIS
Harare City Council authorities	10	Key Informant Interviews	Thematic Coding
Civil water organizations officials	20	Focus Group Discussions	Content
Harare residents	271	Questionnaires	SPSS
Total Population	301		

Source: Own Illustration (2017)

4.18 RESULTS AND FINDINGS

This section of the study gives an explicit discussion of the findings which were gathered from the respondents and analysed to make sense out of it in an attempt to make conclusive recommendations on the efficacy of prepaid water meters for potable water provision in the Harare City Council.

4.19 PERCEPTIONS OF CITIZENS TOWARDS THE TECHNICAL CAPACITY OF HARARE CITY COUNCIL IN RESIDENTIAL AREAS

In comprehending the efficacy of prepaid water meters, this study argues that the Harare City Council lacks the technical capacity to administer the meters. This study further cites that, due to dissatisfaction with the post-paid water meters, low water quality, and dilapidating infrastructure, failure to generate revenue, inept administration and the socio-economic status of Zimbabwe amongst other issues, the technical capacity is therefore limited or lacking thereof (Murungweni, 2013; CHRA, 2015). This section of this study specifically focused on highlighting the

factors underpinning the technical capacity of the Harare City Council in successfully implementing prepaid water meters, as provided by the empirical findings.

The findings established that of the total 271 respondents from the designated residential areas who participated in the survey, an average of 30.6% was not sure and 27.2% disagreed on the lack of technical capacity to the Harare City Council. The graphical presentation shows that most of the respondents that strongly disagreed with the technical capacity of Harare City Council were from the high-density areas (46.2%). This was followed by 51.1% from the high density who disagreed as well as 37.7% from medium density areas that were not sure of the technical capacity of the city council to run the PPWM's. Most of the respondents who agreed that the city council has technical capacity were from medium density areas (41.7%) and those who strongly agreed that HCC has technical capacity were also from the medium density areas (81.8%). This study, therefore, emphasises how urban potable water management, pre and post prepaid water implementation has worsened the potable water challenges due to the technical incapacity of the Harare City Council for potable water provision.

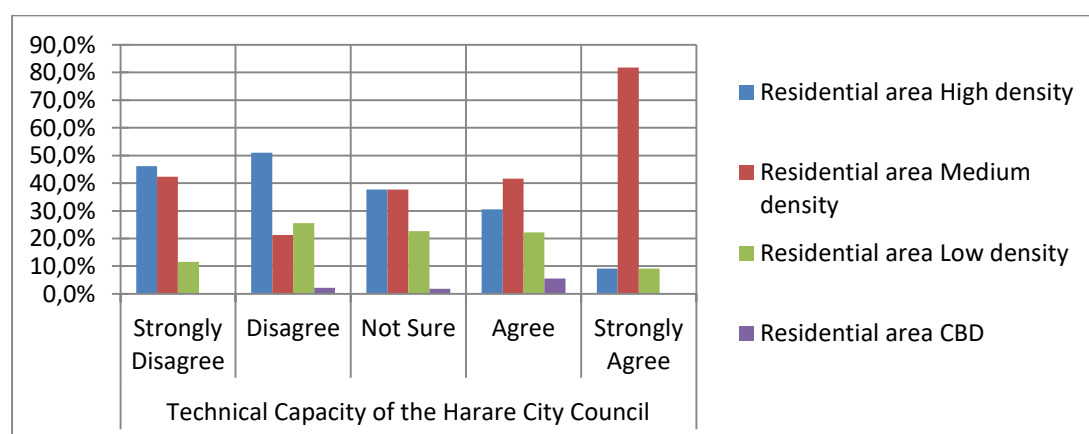


Figure 24 Perceptions of citizens towards technical capacity of the HCC towards water provision

A CHRA Official noted that:

“We have heard that it is a Pilot project and opinions are very limited. The views are very dissected and divided. I hope you also know that ZESA is still performing below par and it had imagined that the prepaid system would be a technical fairy-tale to.”

A Harare Residents Trust Association Official said that:

“They do not have that capacity, because it is a very complex system. They have the wrong assumption on payment because they are ignoring the concern of water supply interruptions and malfunctions to which PPWM’s are susceptible to. Taking into accounting that the battery life of PPWM’s is 3-5 years.”

The study established that the resident's opinions are divergent with some having gathered that PPWM execution is still a pilot project from which the City Council is carrying out a feasibility assessment. However, some residents argue that ZESA implemented the prepaid electricity meters and they have not yet realized their ultimate objectives as far as revenue generation and efficient service delivery is concerned and (Nhema & Zinyama, 2016) also echo the same sentiments. This simply implies that the residents perceive that Harare City Council has followed suit in anticipating profit accrual and resuscitation of the potable water system with the PPWM’s while being oblivious of its ability to administer the meters.

Therefore, the residents maintain that the PPWM’s might also fail if the Harare City Council fails to address the systemic issues hampering potable water service delivery. There is also a population within the residents who are citing effectiveness with regards to the PPWM because post-paid metering has been inconsistent due to the unreasonable estimated monthly bills as also reasoned by (Thompson & de Wet, 2013). Findings from the study established that the residents argue that, the Harare City Council does not possess the technical capacity to efficiently execute potable water service provision with the PPWM’s. This is because PPWM’s have a high level of sophistication and its predisposition to error are also significant dynamics to factor in when considering the fact that the HCC has been struggling to efficiently sustain a simpler and cheaper system.

A Harare City Council Official stated that:

“It is a new product we are not really ready but we are building capacity and we have been working on the unintended outcomes like cyber-crime which our loss control department will have to be capacitated as residents may bypass the meters.”

Another Harare City Council Official said that:

“Feasibility studies have been undertaken for technical capacity and the relevant people have been capacitated through various training programmes, to ensure the successful implementation of the PPWM’s.”

A respondent from the Harare City Council noted that PPWM's are a fairly new concept in which they are still edifying their technical capacity to administer, thus they cannot conclude that they have the technical capacity to manage the PPWM's. Hence, their argument is that it would be an injustice to completely rule off their ability to handle the PPWM, based on past experiences which are devoid of the PPWM's. Additionally, they confirmed that to ensure the edification process of the PPWM's the HCC is also undertaking intensive training and development for their human resource to ensure that they are well-prepared to efficiently manage the PPWM's. The findings established that the Harare City Council confirms that the organization has the technical capacity to provide water through the PPWM's to such an extent that they have undertaken reasonable measures to ensure that their human resource is well prepared to oversee the new system.

4.20 TECHNICAL CAPACITY OF THE HARARE CITY COUNCIL TO IMPROVE REVENUE GENERATION THROUGH PPWM's

Mudzingwa (2015) argues that prepaid water meter implementation does not imply automatic revenue accrual because there are certain dynamics that have to be present, hence given Harare City Council's lack of technical capacity, revenue accrual will remain obscured. Gambe (2013); Chatiza (2016) maintain that, despite the lack of technical capacity by the Harare City Council, improving revenue accrual will not be easily made possible bearing in mind that residents currently access water from other conventional and unconventional sources which are free of charge. As a result, residents would rather opt to access potable water for free from their

alternatives which might, however, be unsafe as opposed to prepaying for services with money most of them do not even have, given the socio-economic status of the nation (Chirenda et al., 2015). Likewise, this study basically has uncertainties on the assumption by the Harare City Council, that they will generate revenue from prepaid water meters. Matabvu (2016); Chaminuka and Nyatsanza (2013) affirm that, the Harare City Council is placing all its hopes on revenue generation while being ignorant of the factors that underlie the successful implementation of prepaid water meters, amongst which is technical capacity of the service provider bearing in mind the complex nature of the meters.

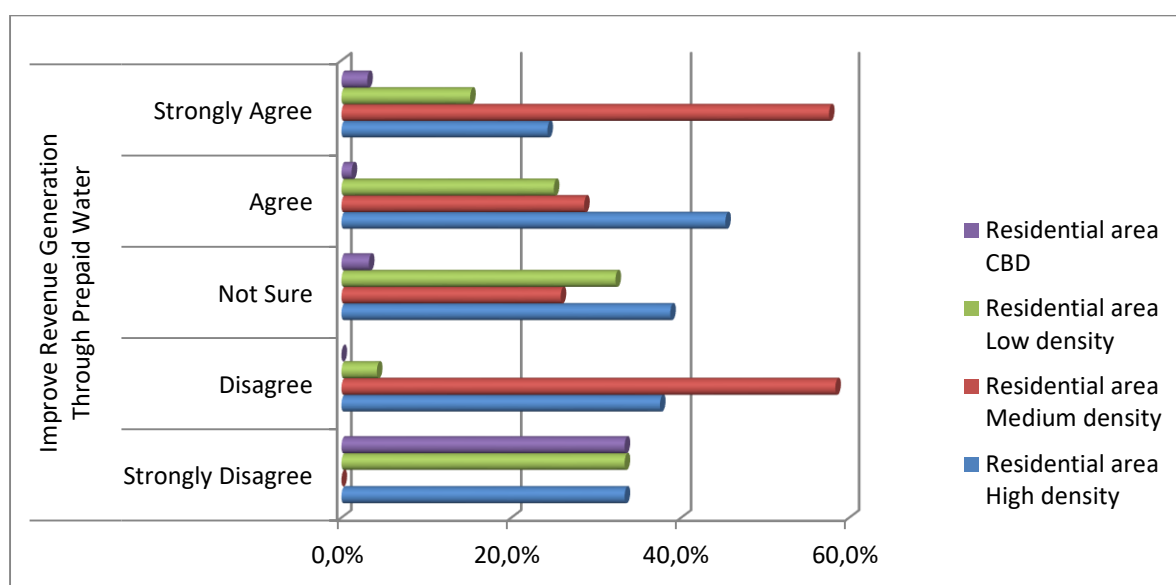


Figure 25 Perceptions of Citizens towards PPWM's and revenue generation

The Urban Councils Act (29:15) of 2015 provides for the “establishment of rates or any special rates on any chargeable property by the council in charge for the purpose of revenue accrual”. The Constitution in retrospect argues for the human right to water for all, while the Social Services Cluster of the ZIMASSET argues for the expansion of access to potable water (ZIMASSET, 2013). This study shows that of the 271 respondents from the designated residential areas, 48% agreed and 18.9% strongly agreed that the HCC does not have the technical capacity to improve revenue through the PPWM’s for the Harare City Council. The graphical presentation above also shows that most of the respondents that strongly disagreed that the HCC has the technical capacity to improve revenue through the PPWM’s were from the high-density areas, low-density areas, and CBD areas respectively with (33.3%).

This was followed by 58.3% from the medium density areas as well as 38.7% from the high-density areas that were not sure of the technical capacity of the HCC to improve revenue through PPWM's. Most of the respondents who strongly agreed that the HCC has the technical capacity to improve revenue generation through PPWM's were from the medium density areas (57.6%). This study argues that one of the core pieces of legislation (Water Act, 31 of 1998) which gives provisions for water management does not articulately provide for the provisions of potable water supply, which is a major disadvantage because it only provides for primary purposes of potable water amongst other factors.

Harare City Council Official highlighted that:

“Not necessarily more revenue but will improve the pattern of revenue collection as people will be paying for what they anticipate to use. You should also be aware that, there is the likelihood of residents scaling down water use.”

Another Harare City Council Official said that:

“If the prepaid water meters improve revenue collection there is going to be an improvement in potable water supply, only if there is ring-fencing of funds for the purposes of day to day operations. But if the revenue is going into the common pool there is the likelihood of the situation remaining the same because the revenue base is somewhat shrunk due to minimal funding.

Another Harare City Council Official also stated that:

“Yes, it is logical to say more revenue means more capacity budgeting on the operation and maintenance which will lead to an increase and improvement in treatment and chemicals supply.”

The Harare City Council suggests that PPWM's will not necessarily enable revenue accrual but the pattern of payment will be slightly altered since the users will actually be paying before usage as opposed to non-payment after use of water services, which based on inefficient estimates. However, the potential of PPWM's to actually generate profit is reliant upon the accountability of the office bearers who are in charge of dedicating funds specifically for potable water restructuring. Hence

Heymans et al., (2014); Harvey (2005) affirm that PPWM's can accrue any profit if the funds are not diverted to other fruitless expenditure by an inept administration. This study also acknowledges that the HCC does perceive the forthcoming of the PPWM's generating profit for the city council since they argue that residents were not paying for services with the estimated billing system enabled by the post-paid water meters and hopefully pre-payment would boost income.

Thus their argument is that non-payment of services was ultimately affecting their revenue cash-flow because, (Nhede, 2012; Mashayamombe & Hofisi, 2016; OECD, 2006) confirm that public service provision consists of a system which operates on a consistent supply of revenue to efficiently propagate the service delivery cycle. The study conclusively established that, with revenue accumulation, the city council would be in a better position to budget and designate adequate funds for efficient service delivery. This implies that if the revenue is channeled towards water treatment and infrastructural development and then there would ultimately be sustainable potable water supply to the residents.

4.21 PERCEPTIONS OF CITIZENS TOWARDS TECHNICAL CAPACITY OF THE HARARE CITY COUNCIL TO IMPROVE POTABLE WATER SUPPLY THROUGH PPWM

The technical capacity of the Harare City Council to improve potable water supply, through the prepaid water meters remains a bone of contention because (Mudzingwa, 2015; Matabvu, 2015; Thompson & de Wet, 2013) advocate that prepaid water meters only change the means of payment, not the source or quality of potable water supplied. Hence the recurring argument that if the Harare City Council has dismally failed to ensure potable water supply with a simpler system what guarantee is there that they will be able to improve potable water supply with a much complex system. Lack of responsiveness to leaks or burst pipes is also an indicator on the lack of technical capacity by the Harare City Council to ensure improved potable water supply (Nhapi, 2009; Jonga and Chirisa, 2010. Additionally, CHRA (2015) asserts that, regardless of the existence of a Helpdesk by the Harare City Council, their response rate is as good as none. Hence the argument that, if the Harare City Council is failing to address minor issues like leaks or burst pipes, what

capacity will they have to efficiently administer complex prepaid water meters and improve potable water supply to the residents.

The study established that, out of all the respondents from the designated residential areas, 36% agreed and 32% were not sure that the HCC had the technical capacity to improve potable water supply through the PPWM's. The graphical presentations display that most of the respondents that strongly disagreed that the HCC has the technical capacity to improve potable water supply with the PPWM's were from medium density areas (50%). This was followed by 57.1% from the medium density areas who disagreed that the HCC has the technical capacity as well as 60.7% from the high-density areas that were not sure about the technical capacity of the HCC. The respondents who strongly agreed that the HCC has the technical capacity to improve potable water supply with the implementation of PPWM's were from the medium density (70%). This study also argues that the technical capacity of the Harare City Council to ensure improved potable water supply is already limited given the brain drain resulting from the failed status of Zimbabwe (Nhema & Zinyama, 2016). Given the socio-economic status of Zimbabwe, the Harare City Council has even been receiving aid in various forms from non-governmental organizations in terms of water treatment chemicals, borehole drilling, distribution of water containers and water disinfectants in low-income residential areas (CHRA, 2015; Nhema & Zinyama, 2016; Chirenda et al., 2015).

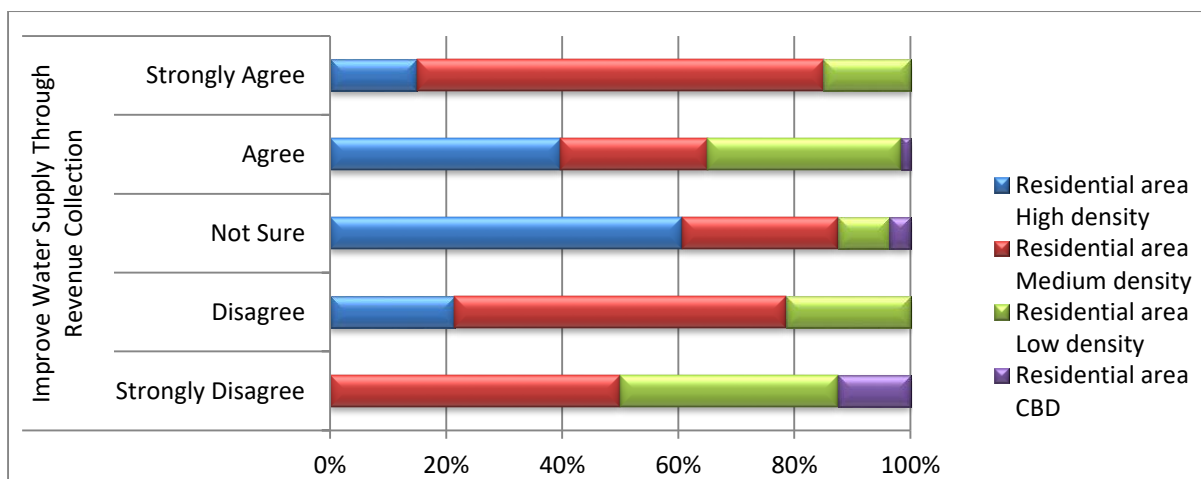


Figure 26 Perceptions of citizens towards PPWM's and potable water supply improvements

The findings from the study, actually confirm the hypothesis underpinning this research, that the Harare City Council lacks the technical capacity to administer prepaid water meters for potable water provision. This essentially summarizes the lack of technical capacity by the Harare City Council, which is a major factor in comprehending the efficacy of prepaid water meters for potable water provision in Harare. The Harare City Council maintains that prepaid water meters are operative in ensuring that residents pay for water services, but they alienate their capacity of administering these meters amidst all the controversy surrounding prepaid water meters. Harare Water Director Engineer Christopher Zvobgo in an interview with the Zimbabwe Herald of 25 July 2012 indicated that an average 45% of potable water is lost out from non-revenue water and this is a clear indication to the lack of technical capacity to ensure potable water supply (Matabvu, 2016:4). Given that, it has failed to put in place measures to address non-revenue water, there is no distinct guarantee that it will efficiently and effectively ensure the improvement of potable water supply to the Harare residents. Hence, this study argues that the Harare City Council has to put in place administrative measures that curtail leaks and wastage of such an amount of treated water, to ensure the efficacy of prepaid water meters.

A CHRA Official indicated that:

“Debate has taken a division within the residents because low-density residents want them since money is not a major factor for them because all they want is water. Low-density residents feel that, it is about being billed for consumption and running away from fixed consumption and besides they have boreholes for alternative water supply. In the high-density areas, residents are totally against them because they argue that Section 68 of the Constitution talks about procedural fairness in the administration of rights for your service.”

The study recognized that the citizen's perceptions are actually split between the low-income earners and the high-income earners who are citing their own reasons in contending or advocating for the PPWM. High-income earners argue that all they need is their constant potable water supply as long as they are able to pay for the service at whatever cost. The low-income earners are in conflict citing that low-income earners all have borehole pumped water supply in their households hence; they have alternatives if they ultimately decide not to pay for the prepaid council water. Conversely, the study gathered that for the low-income earners the cost of prepaying for water will be a deterrent for them pending the current socio-economic crisis which is directly tied to the cash-crisis in Zimbabwe (Chatiza, 2016; Majuru et al., 2016). Low-income households also argue that the average cost of a PPWM is exorbitant and the financial effect will trickle down on them bearing the brunt, despite this being against Section 68 of the (Constitution, 2013). The greater population of the residents in the low-income households maintain that the Harare City Council is unable to address the underlying potable water crisis with PPWM's, citing that it should rather first fix the existing problems instead of creating more complications with the complex PPWM's.

4.22 PERCEPTIONS OF CITIZENS TOWARDS HCC WATER QUALITY

Mudzingwa (2015) affirms that Lake Chivero, which is Harare City Council's major source of raw water, is rated amongst the top ten most polluted lakes in the world. Furthermore, Majuru et al., 2016, Chirenda et al., (2015); DFID (2015) maintain that raw water from Lake Chivero is extremely polluted such that huge sums of money have to be spent to purchase water treatment chemicals, some of which are even imported. It is sensible to note that with Zimbabwe succumbing to the economic crunch, the Harare City Council has not been spared by the economic plague and as a result, water chemicals are not adequately bought and at times they are sparingly used, which has an effect on the quality of potable which reaches the end-user which is not fit for human consumption (Nhema & Zinyama, 2013). Harvey (2005); Kayaga (2008); Chikozho (2007); GWP (2000) espouse that continuous potable water disconnections have a causal-link on the quality of water because when there is no supply for long periods of times water pipes are jammed with debris which then affects the quality of potable water. Harare residents have unfortunately no confidence in the technical capacity of the City Council because the current water quality is not potable. The perceptions of middle-income household's residents towards PPWM's are not really well-documented because the study gathered that, they rely on water merchants whose water quality and water services are arguably unreliable since they operate under unregulated frameworks.

As a result, this study maintains that the technical capacity of the Harare City Council to adequately administer prepaid water meters is shrouded by a lot of factors, which deem them unfit. Likewise, the graph below reveals that based on the responses the lack of technical capacity by the HCC, water quality in Harare is rated between very low (59%) to low (26.9%). Hence, based on the responses from the study 37% of the respondents who rated the potable water quality very low were not sure of the Harare City Council's technical capacity to sustain PPWM's. 31% of the respondents, who rated the potable water quality low, disagreed with the assertion that the Harare City Council had technical capacity. Resultantly, 57% of the respondents who rated the potable water quality highly were not sure of the technical capacity of the HCC to implement the PPWM's and 33.3% of the respondents who rated the potable water quality very high were also not sure of the technical capacity of the HCC to administer PPWM's. Given this background, it is essential to note that,

human rights international laws establish that the public service provider should fulfill their mandates in ensuring potable water supply fit for human consumption reaches the end-user WWAP/UNESCO, 2006; UNICEF, 2016).

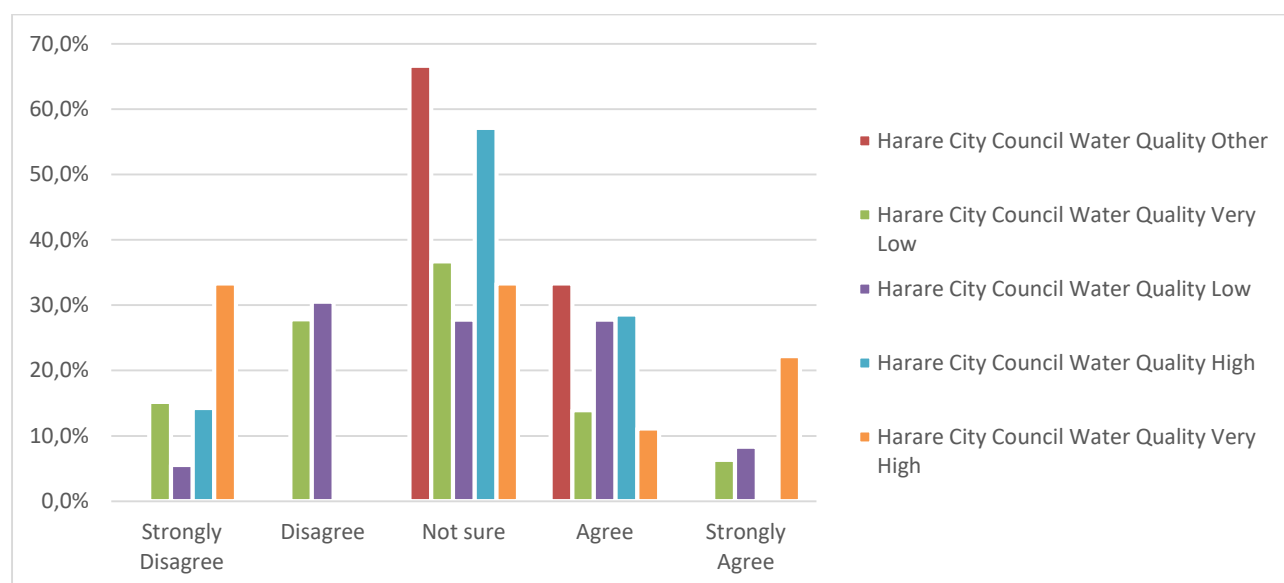


Figure 27 Perceptions of citizen's towards HCC water quality

The Harare Residents said that:

“PPWM’s will not ensure potable water quality because even before the economic situation deteriorated we would still receive dirty, smelly and discolored water. So what guarantee is there that people will get quality potable water? The economy is too tough and the city fathers are corrupt. We have these old water pipes and in the event that I spend a month without prepaying when water then comes, these meters will be rusty and this will still affect the water quality.”

It is essential to note that PPWM's will not change the potable water quality, which residents argue to be smelly, dirty and discolored as confirmed by (Mudzingwa, 2015; Chaminuka & Nyatsanza, 2013). Thus, the Harare residents association cited that even if the PPWM's were to be effective, the city council is not cooperative due to endemic corruption, so prepaying for water will be promoting corruption. This means that the effectiveness of the PPWM's will not be fully exploited because

residents argue that they will not pay thereby affecting the cash flow system of the Harare city council as a result proving the prepaid water meters to be ineffective for potable water provision.

4.23 PERCEPTIONS OF THE CITIZENS TOWARDS CORRUPTION IN THE HCC

It is an imperative factor to note that, (CHRA, 2015; Gambe, 2013; Matabvu, 2016) argue that, the Harare City Council is implementing prepaid water meters for political and economic reasons which are stemming from the needs to solve their underlying management issues. Furthermore, Nhema and Zinyama (2016) acknowledge that pending it's cataloging as a failed state; the Harare City Council is also succumbing to inept management due to financial mismanagement and maladministration. Likewise, Nhapi (2009); Chiri (2004); Chirisa (2013); Jonga and Chirisa (2009) note that, the Harare City Council has resultantly failed to restructure and upgrade its potable water systems because there is lack of financial accountability due to the corrupt nature of the system and this has affected the revenue coffers. Hence, this study argues that, if the Harare City Council is succumbing to financial mismanagement which is directly tied to corruption, then there is no guarantee in realizing the efficacy of prepaid water meters for potable water provision.

The graphical presentation below clearly indicates that based on the perceptions of residents towards the lack of technical capacity of the HCC, corruption is rated high (30.9%) to very high (52.2%). Furthermore, 37% of the respondents that rated the HCC to have very low corruption, strongly point to the lack of technical capacity by the HCC to oversee PPWM's for potable water provision. However, 75% of the respondents who rated HCC to have low corruption was not sure about the technical capacity of the HCC to sustain PPWM's. As a result, 35.7% of the respondents who rated HCC to be highly corrupt agreed that the HCC has the technical capacity to undertake the PPWM's, while 33, 8% of the respondents disagreed with the assertion. Consequentially, this study confirms that the technical capacity of the Harare City Council to efficiently administer prepaid water meters will be clouded by the corrupt nature of the system which will affect the revenue collection system and potable water provision systems.

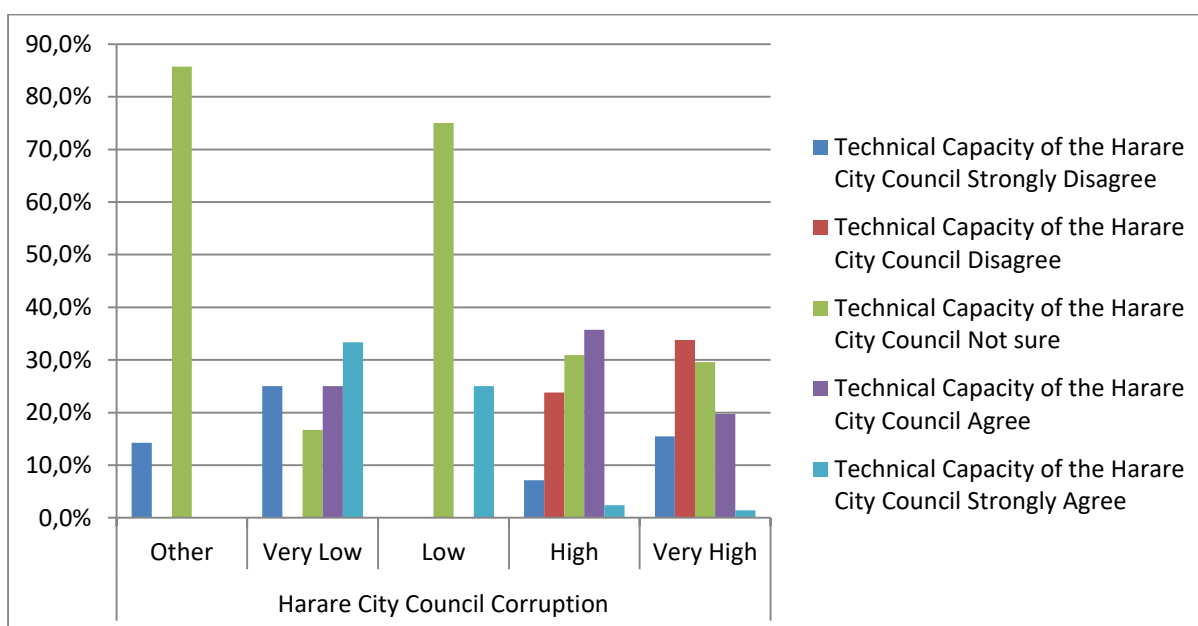


Figure 28 Perceptions of the citizens towards corruption in the HCC

The Harare City Council said that:

“Residents feel they are being short-changed as they feel the prepayment is as good as giving an interest-free loan to the city council without an option of opting out of the contract. Seen as a demand management instrument, prepaid water metering has the ability to help address potable water consumption. PPWM’s are a mechanism for raising resources to rehabilitate, properly maintain and expand services but however, prepaid water metering gets bogged down in fundamental debates regarding Harare’s overall governance efficacy.”

The City Council officials noted that residents perceive the Harare City Council to be corrupt such that they feel cheated and as a result, their argument is that prepaid water meter implementation will not be successful without the input of the residents. The Harare City Council also argues that the residents of Harare view the PPWM’s as a tool that will limit potable water consumption, but in actual fact, it enables water conservation, by limiting any probable wastage (Njoh, 2003; Berg & Mugisha, 2010). Thus, the Harare City Council cites that the residents should actually view the

PPWM's as a potable water provision device which is meant to promote revenue generation and ultimately restructure the potable water infrastructural system for the resident's benefit. De-corrupting the endemic corrupt system was also noted as being essential because it is accounting for the dissatisfaction of service provision by the public and (Fesler, 1968; Mason, 2009) also echo the same sentiments.

4.24 PERCEPTIONS OF THE CITIZENS TOWARDS HCC MANAGEMENT

Potable water management systems in developed states like the United Kingdom totally prohibit disconnection of potable water services to the public because of the underlying human rights frameworks to water (BMA, 1994; Drakeford, 1998). Other developed nations like Hungary, only permit disconnection from potable water services after an average of six months without paying for services, but they should at least have access to potable water from a communal standpipe (OFWAT, 1999; Njoh, 2003). In Argentina for instance, the public service provider articulates that potable water services can be disconnected but should still be available in the provisions of the basic needs underlying the human rights frameworks (Kalabamu & Thebe, 2005). It is essential to note that, as much as these countries are denoted as developed nations, the fundamentals of good management enable them to comprehend the human right to potable water while being mindful of the public service provision principles. As a result, this study argues that the Harare City Council has poor management which is non-consultative and non-participatory and inept as affirmed to by the (Crisis in Zimbabwe Coalition, 2010). Hence, this implies that the Harare City Council's technical capacity to administer prepaid water meters for potable water provision is limited and entangled in its poor management as a service provider.

Thus, the capacity of the Harare City Council to effectively implement prepaid water meters without adopting alternative strategies of potable water provision to the public is also embedded in its poor management system. Cloete (1994); Matsinhe et al., (2014); Mashayamombe and Hofisi (2016) avow that management of public service provision in developing nations is a key factor in service provision. Simultaneously, Kenya encountered potable water challenges in an attempt to strike a balance between the human rights framework and the financial aspect relating to the service

provision framework (Berg & Mugisha, 2010). Conversely, an effective management system enabled the implementation of “service differentiation”, which was strategically devised to provide for the different economic quintiles within the country as a result residents were able to achieve different levels of service at different prices.

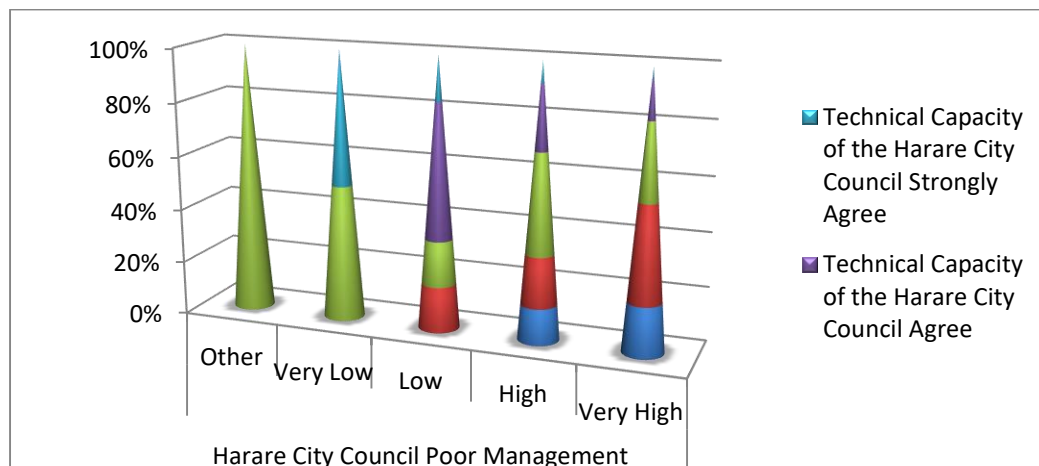


Figure 29 Perceptions of citizens towards HCC management

The graphical presentation above reveals that based on the citizen’s perceptions, there is poor management which is rated high (26.6%) to very high (65%). Furthermore, 50% of the respondents who noted that HCC had very low poor management, strongly agreed that HCC does not have the technical capacity to run the PPWM’s and 50% of the respondents were uncertain. 36.8% of the respondents who noted that poor management was very high was not sure that HCC has the technical capacity to implement PPWM’s, while 35.5% of the respondents agreed that HCC has the technical capacity to govern PPWM’s. The underlying factors of good management within the service differentiation parameters have been argued to redirect their focus on the financial aspect of service delivery whilst being unaware of the human rights aspect relating to equity and accessibility for all.

A CHRA official highlighted that:

“The challenge is that the HCC management is treating the effects of the problem and ignoring the causes of the problem and PPWM’s will not be able to address the potable water crisis. Understand that, one of the major causes is water production versus demand at the Morton Jeffery water

plant. Secondly NRW, thirdly there is corruption. Fourthly, there are water governance issues which lack financial management systems and there is obsolete water infrastructure. The fact that they want to recoup revenue collection is a total fallacy, for 37 years there has been revenue collection but no change yet more breakdown of the water distribution system.”

The study reveals that there is mistrust between the residents and the City authorities because the residents perceive the latter to be corrupt and inefficient since they perceive them to be misdirecting their focus as service providers into profit makers. The residents association cited a plethora of challenges that are currently underpinning the City Council and they contended that the City Council cannot miraculously transform the potable water system by implementing PPWM's. The argument is that they should redirect their focus to ensuring quality and effective service provision then capitalize on profit making when there is customer's satisfaction.

4.25 PERCEPTION OF CITIZENS TOWARDS REVENUE COLLECTION IN THE HCC

Proponents of prepaid water meters have constantly argued that the meters are meant to enable accountability by ensuring payment for potable water service is done to evade debts from estimated bills while maximizing revenue accrual (Berg & Mugisha, 2010; Marvin et al., 1999). The argument which deems the Harare City Council technically incapable of ensuring potable water provision with prepaid water meters is a failure to collect adequate revenue. This study cites that access to potable water provision, pre and post prepaid water meter implementation in Harare has been inhibited by the failure to maximize adequate revenue, to ensure continuity. Meter readings which are dependent upon monthly estimates have inadvertently further dried up the already dehydrated public service coffers because, at times residents tamper with the meter readings and at times the estimates are undercharged thereby further plaguing in the City Council in debt (CHRA, 2015; Mapuva & Muyengwa, 2012; GWP, 2000).

Based on the findings from the 271 respondents, the graph shows that based on the lack thereof of the technical capacity of the Harare City Council, the residents perceive the revenue collection system to be between high (25.4%) to very high (37.7%). The graphical representation below shows that 39% of the respondents who rated the very low poor revenue collection system of HCC to be very low actually disagreed that the HCC has the technical capacity to sustain PPWM's. Likewise, 31% of the respondents who rated the low poor revenue collection system of HCC were uncertain about the technical capacity of the HCC. 48.5% of the respondents who rated the poor revenue collection system was not sure about the technical capacity of the HCC to govern the PPWM's.

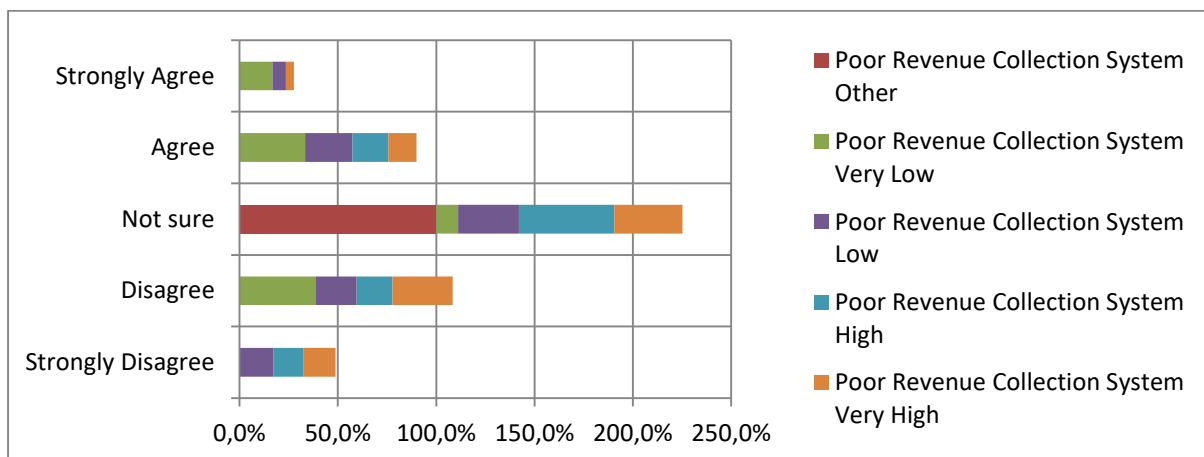


Figure 30 Perceptions of citizens towards revenue collection

Simultaneously, a study undertaken by the Water Utility Partnership in Uganda acknowledged that public service providers yield into a plethora of challenges which directly stem from poor revenue collection, in the potable water provision system (Berg & Mugisha, 2010; Jenny & Nilsson, 2012). The Water Utility Partnership instantaneously declared that “improved cost-recovery ensures sustainability and improved service hence cost-recovery should be a cornerstone of potable water policy reformation” (Kampala Statement, 2001:3). However, the JMP (2017); GWP (2000) espouse that public service providers in developing nations should guarantee access to potable water supply, particularly to the low-income earners whose needs are normally obscured in the formation of service provision tools.

4.26 PERCEPTIONS OF CITIZENS TOWARDS HARARE CITY COUNCIL POTABLE WATER INFRASTRUCTURE

Based on the responses from the survey, this study affirms that the dilapidated infrastructural water system is also a key factor attributing to the technical incapacity of Harare City Council in sustaining prepaid water implementation. The Harare City Council is presently functioning with dilapidated infrastructure such that at times it even fails to deliver water fit enough for human consumption because it is contaminated by the corroded pipeline system (Chiriseri, 2014; Chiri, 2013; Mapuva & Muyengwa, 2012). The Harare City Council is additionally underpinned by constant burst and leaking pipes due to the corrosion and dilapidation (Njoh, 2003, Murungweni, 2013). Chatiza (2016); Moriarty et al., (2010) confirm how infrastructural resuscitation and maintenance are critical factors which determine the success of a public service provider in enabling potable water access and availability. Resultantly, this study argues that the potable water infrastructural system has not been well serviced and maintained post-1980 and as a result has gone into a state of dereliction (Mudzingwa, 2015; Matabvu, 2016).

The graphical presentation below displays that based on the citizen's perceptions on the lack of technical capacity by the Harare City Council, the rate of dilapidated infrastructure is rated from high 15.5% to very high 76.1%. Similarly, 43% of the respondents who rated the very low dilapidated infrastructure of Harare City Council agreed that HCC lacks the technical capacity to undertake PPWM's. Consequentially, 42.9% were uncertain and 50% of the respondents who rated the low dilapidated infrastructure of Harare City Council agreed that the HCC lacks the technical capacity to sustain the PPWM's. 50% of the respondents strongly agreed and 45.5% of the respondents who noted that the infrastructure was highly dilapidated infrastructure was not sure of the technical capacity of the HCC. 32.4% of the respondents disagreed on the lack of technical capacity by the HCC to implement the PPWM's.

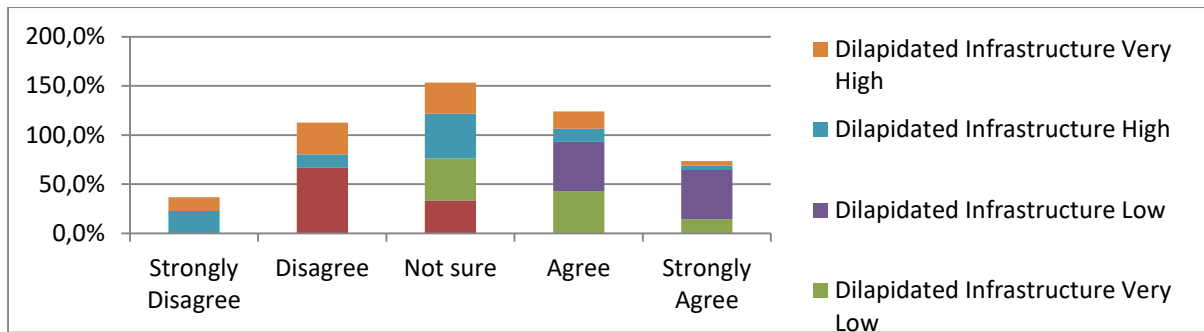


Figure 31 Perceptions of citizens towards the potable water infrastructure

Likewise, this study confirms how the technical capacity of the Harare City Council is totally limited since prepaid water meters are more complex and technical with a predisposition to malfunctioning. Prepaid water meters require a high level of vigilance through constant maintenance and servicing, due to its complex nature which is susceptible to malfunction (Berg & Mugisha, 2010; Mudzingwa, 2015; Dugard, 2010; Abu-Hilou & Jarrar, 2012). Berg and Mugisha (2010) also confirm how prepaid water meters have more parts in motion due to the fluctuating water pressure as compared to prepaid electricity meters; this becomes a drawback because it makes prepaid water meters susceptible to break down. Mapedza and Geheb (2010); Njoh (2003) confirm that prepaid water meters also utilize either electricity or battery power as energy sources, hence the efficacy of prepaid water meters is, therefore, questionable considering Zimbabwe imports electrical energy and its electrical grid is under severing load-shedding. While citing the same element of efficacy, it is also imperative to note that the batteries are imported in the same manner in which the prepaid water meters are imported, which is a financial aspect this study argues to be unrealistic.

Thus, this study comprehends that the Harare City Council will efficiently sustain the prepaid water metering system is impossible because it has since completely failed to manage simple and cheap post-paid water meters for almost two decades (Nhema & Zinyama, 2015; CHRA, 2015). This study argues that there is no guarantee that, Harare City Council will adequately ensure potable water supply with the prepaid water meters, pending its past unsuccessful experience with low-cost and simpler post-paid meters. Based on the empirical evidence from this study, it is also clear-cut that potable water services have not been restructured post-1980 and they have further been derelict post-2008 pending the global financial crisis (Majuru et al., 2016; Chaminuka and Nyatsanza, 2013). As a result, this failure to ensure

availability and accessibility of potable water services has had causal links of the outburst of rampant water-borne diseases, particularly in low-income residents (Majuru et al., 2011; Chirenda et al., 2015; Chigumira & Mujere, 2009).

A CHRA official indicated that:

“The pipes have not been restructured, so even if we get the water, we have other alternatives (boreholes, water tanks amongst others) and we are not even worried about the council water. At times it even becomes slimy with algae.”

The Harare Residents Association said that:

“They do not have technical capacity, because if they are not maintaining the conventional meters, what more the complex PPWM’s. The council is being capitalistic. I think that even if they had the capacity, they would just squander the funds through corruption and political activities.”

The residents association totally refutes the efficacy of PPWM’s citing that residents currently do not pay for services because they lack access to water supply because the infrastructure is dilapidated and the council is inept so the difference is the same because residents have alternatives. They also argue that, the water supply for those who receive it is unclean and beyond human consumption, hence the city council should redirect their focus on restructuring the existing system to ensure that it delivers clean water before focusing on prepayment as affirmed by (Chaminuka & Nyatsanza, 2013; Majuru et al., 2016). The residents association also mentioned that there are countries with better economies that rejected PPWM’s and it is not rational for Zimbabwe as a fragile state to implement them (Drakeford, 1998; GOB, 2012; Kalabamu & Thebe, 2005). This is because JMP (2017) confirms that, the core of potable water has to be directed by the affordability, availability, and accessibility of potable water. This implies that payment for potable water is not even a fundamental matter per se in the absence of these aforementioned factors because their absence directly points to the inability of the service provider to adequately deliver potable water services to the public.

An official from one of the resident's associations also confirmed that the Harare City Council does not currently have the technical capacity to simply deliver potable water due to their failure in sustainably restructuring the conventional meters. Then there is

no reasonable doubt that they will succumb to inhibitions in administering the complex and highly technical PPWM. The argument is that the city council has not given the residents any guarantor to redeem the efficiency of their level of service provision; as a result, the residents have expressed hostility to the PPWM's. Additionally, the argument is that even if the Harare City Council had the technical capacity to ensure the efficacy of PPWM, all the revenue would be dissolved by corrupt activities, fruitless and wasteful expenditure, which they argue to be rampant in the inept organization.

4.27 ECONOMIC CHALLENGES AFFECTING THE TECHNICAL CAPACITY OF THE HARARE CITY COUNCIL

Kayaga (2008); Majuru et al., (2016); OECD (2017) avow how urban water provision and management structures in developing nations have been gradually collapsing due to the economic challenges underpinning the public service, and this as argued above has affected its capacity to restructure its infrastructure. To further worsen the economic challenges inhibiting the successful operative capacity of the Harare City Council, it has been failing to expand due to the ever-increasing urban population (Harris, 2003; Nhema & Zinyama, 2016; Nhede, 2012). Thus, this study argues that the Harare City Council is operating under a limited budget to meet a variety of the public's unlimited needs and as a result, it is failing to meet its own service delivery targets (Mapuva, 2007; Machingauta, 2010). It is therefore apparent that financial resources are extremely limited for the Harare City Council this is even further perpetrated by the inability of the State to sustain its own budget. This study asserts that to ensure efficient and effective potable water supply, the Harare City Council should effectively utilize the limited resources in achieving targeted results. Mapedza and Geheb (2010); DFID (2015) affirms how an effective and efficient outline of the limited financial resources, can fundamentally benefit both the public and the public service provider inter alia, from the trickle effect.

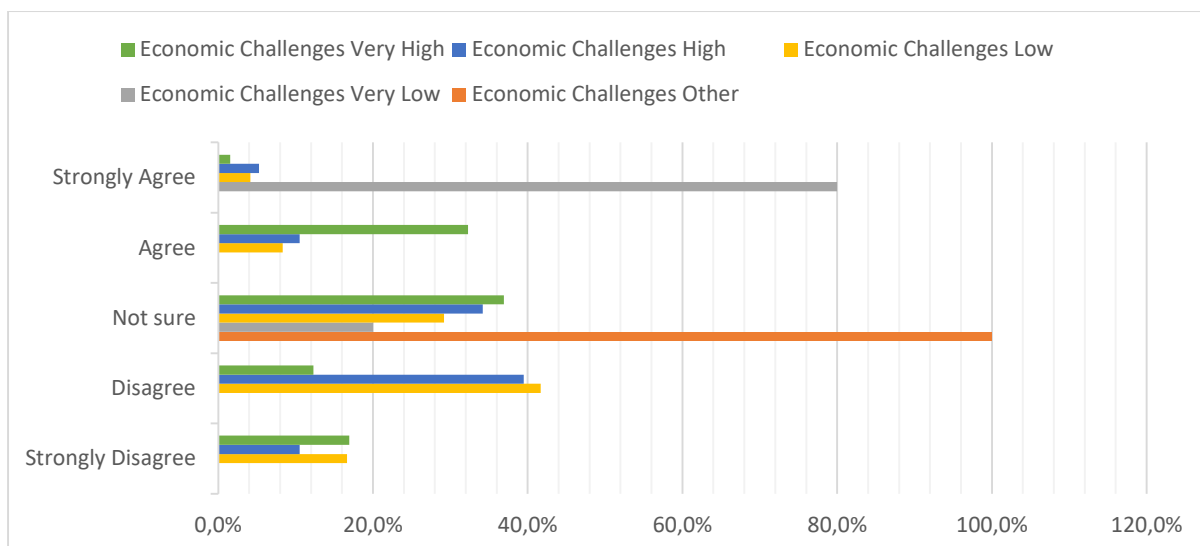


Figure 32 Perceptions of citizens towards the PPWM's and economic challenges

The graphical plot above demonstrates that based on the citizen's perceptions, economic challenges are rated from high (28.6%) to very high (48.9%). On the other hand, 80% of the respondents who rated the economic challenges to be very low strongly agreed to the HCC lacking technical capacity. 42% of the respondents who rated the Harare City Council lack of technical capacity citing economic challenges, whilst 39.5% of the respondents who highly rated the poor economic challenges also disagreed that the Harare City Council has the technical capacity to undertake PPWM's. It is essential to acknowledge that the Constitution of Zimbabwe (2013) 298 (1) (d) affirms that public finances must be transparently used to ensure effective and efficient use of funds.

This simply indicates how the public service should enable resource efficiency even within the varying dynamics of economic stresses and pressures. Resulting from this argument is the particular concern that public service providers do not have the capacity to adequately govern the financial provisions of public service as revealed by the lack of infrastructural investment and infrastructural dilapidation. Consequently, despite the apparent evidence of economic challenges, residents should be engaged into the public finance management dynamics through public participation, to ensure efficiency in public resources as argued by (Nhede, 2012; Zhou, 2013).

4.28 PUBLIC CONSULTATIONS ON PPWM IMPLEMENTATION

The Harare residents maintain that the city council does not have an open dialogue with the residents and they are only coercing the residents into accepting the PPWM's for potable water provision as asserted to by (CHRA, 2015). The resident's association argued that the residents were not even consulted because the government responsible to inform the public who have the right to information is typically ignorant of the needs of the public. The respondent also echoed that, if the city council had consulted the public then they would have known that PPWM's are low-income household friendly, especially given the socio-economic status of the country and the liquidity crisis. They also argue that the Harare City Council perceives PPWM's to be a fundraising measure, while they are ignoring the appropriate element of efficient service delivery to the citizens, given the dynamics of water being an inalienable right which is also echoed by (Mudzingwa, 2015; Matabvu, 2015).

The CHRA noted that:

“There was no consultation and they are still calling it a pilot project and yet we know it is already full-scale. Residents were not incorporated at all because they are just victims of a divided and ignorant system.”

The Harare Residents Association elaborated that:

“They never involved us upon implementation and it only came out through hearsay, we did not even know how the meters look like because they knew we would reject them that is why they did not incorporate us.”

The resident's associations reiterated on the fact that the resident's perceptions are split into supporters and challengers of PPWM's and it becomes unclear on whether they were involved in the public policy process leading to the implementation of PPWM's or not. However, what remains apparent as established from the study results is that residents were not included as relevant stakeholders in the public policy-making process with regards to prepaid water meter implementation for potable water provision. Likewise, the study also established that communication platforms between the Harare residents and the Harare City Council in ensuring public participation in the public policy process are obscured as confirmed by

(CHRA, 2015; Mudzingwa, 2015; Matabvu, 2016). Resultantly, the study gathered that the Harare residents argue that, the HCC did not consult them prior to implementing PPWM and that they only discovered when they were actually installing them in some households as part of their ultimate plan. Hence, the Harare residents argue that the City Council had to impose the PPWM's because if they had incorporated the public prior to the implementation process then the residents would have rejected them initially.

4.29 CONCLUSION

Due to the lack of open dialogue between the residents and the service provider, prepaid water meter implementation has faced stiff resistance from the residents who are citing numerous issues amongst which is the technical incapacity of the Harare City Council. Hence, this study confirms that, on a national scale, Zimbabwe is incessantly tasked with the mammoth task to efficiently and effectively deliver quality potable water services to the public. However, there is an apparent crisis underpinning the Harare City Council as a water service provider. Conversely what is generally clear is that without a resuscitation strategy, Harare will continuously endure the risk and adverse effects of more water-borne diseases related illnesses and deaths which impact on the human livelihoods of the residents. The Harare City Council has been entrenched in a plethora of challenges ranging from overpopulation, budget shortfalls, derelict infrastructural systems, brain drain and discordant policy frameworks amongst others. These problems reflect themselves in the collapse of the potable water infrastructural system, which has led to the introduction of prepaid water meters whose efficacy this study comprehends.

This study also acknowledges that service provision consists of a "two-way traffic" zone whose critical drivers are the public and the service provider. Likewise, the study further concludes that the Urban Council's Act should be amended by enabling provisions for comprehensive stakeholder engagement in matters regarding urban potable water management and supply since the existing frameworks are not essentially consolidated to address this. Existing legislation specifically focuses more on subliminal public consultation rather than direct stakeholder engagement which promotes transparency and ultimately efficient, effective, economic and equitable public service provision. Nevertheless, democracy in developing nations ushered in

the emergence of resident associations. Resident associations have been key catalysts that act as a spring-boards between the two key drivers of the public provision cycle, therefore Harare residents have structured themselves into various resident associations within their areas. Hence, despite their technical incapacity or lack thereof, the Harare City Council should strive for public consultation and stakeholder involvement which is representative of the relevant stakeholders to ensure solid citizen satisfaction and seamless public service.

Additionally, the state should also enable the promulgation of a legislative framework which is essentially targeted on the progressive realization of the human right to potable water, in lieu of prepaid water implementation. This could even imply, enabling the dynamics that underlie “service differentiation” in ensuring residents have core access to potable water supply by delivering services based on what best suits each community. Although, “service differentiation” is argued to result in inequitable service provision whose effects widely impact on the low-income households. Likewise, “service differentiation” is also argued to confine the low-income households into non-payment since they would be exempted from the differentiation. On the same note, Zimbabwe should strike a balance between the need to coerce residents to pay for potable water services and the need to genuinely accrue profits for infrastructural resuscitation. This can be achieved through rigorous public consultation processes which will give leeway for citizen satisfaction in the public service cycle. Moreover, it is mandatory for the service provider to consult the populace when implementing a public policy since public service can only be effective if there is a solid social contract between the ratepayers and the local authority. Based on the fundamentals of public service, residents should fulfill their responsibilities as ratepayers whilst Harare City Council will ultimately deliver services as the service provider based on the actual needs of the public as envisioned through the provided social contract. This essentially implies that the social contract should be harnessed through the “domino effect of service delivery” which culminates with citizen satisfaction which is derived from a “high level” of service delivery.

This study carefully concludes that Harare City Council is ingrained in a situation where lack of investment has led to poor service levels, which have ultimately led to an unwillingness to pay for services by the citizens and the cycle continuously

revolves. The aim of this research is to also essentially inform the government of Zimbabwe on the feasibility of prepaid water meters given the current socio-economic status of the state with regards to improved potable water service provision. These failures reasoned above are clear pointers in revealing the technical incapacity of the Harare City Council in ensuring potable water supply to the Harare Residents, through prepaid water meter implementation. The public water services account provides vast amounts of finances for the public sector, such that prepaid water meter implementation is essentially projected as a revenue generation strategy. However, this study avows that, it is imperative to recommend on the most appropriate means of potable water service provision which suits the Zimbabwean context based on lessons of what has worked in other developing nations. Resultantly, the forthcoming chapter then sets the tone, for creating a trade-off in exploring the appropriate alternative strategies to potable water provision, amidst the dynamic factors surrounding prepaid water meters in Harare. As a result, the final chapter of this research also ultimately explores a tailor-made service provision potable water framework for the Harare City Council.

CHAPTER FIVE

REVIEWING PREPAID WATER METERS TOWARDS ALTERNATIVE STRATEGIES FOR POTABLE WATER PROVISION

5.1 INTRODUCTION AND BACKGROUND OF THE STUDY

The previous chapters provided a background into the various segments of prepaid water meters, ranging from perceptions of the residents to technical capacity of the service provider to delivering potable water. This helped to contextualize this chapter of study because there is now a better understanding of what both the Harare residents and the Harare City Council want, in the context of prepaid water meters. This chapter serves as an integration chapter by collaborating all the relevant actors involved in reviewing prepaid water meters towards sustainable alternative strategies for potable water provision in Harare. This is because, the bearings underpinned by the failure to access potable water supply evidently have visible effects on humankind, yet studies whose focus is on alternative sources of potable water provision remain relatively understudied (Smith & Hanson, 2003; Castro and Morel, 2008; Berg & Mugisha, 2010; Allen et al., 2006; Dugard, 2010; Gilbert, 2007). Studies reveal that when residents fail to access potable water they resort to unsustainable sources which promote the influx of water-borne diseases (JMP, 2017; Matabvu, 2016; Bakker, 2007; GOB, 2012). Similarly, the post-2015 development agenda goals explicitly articulate on the targets that highlight how potable water should be available and accessible to all by 2030, but however no clarity is made on how the potable water should be provided or rather the sources of potable water (JMP, 2017; CHRA, 2015; UNICEF, 2016; WWAP/UNESCO, 2006). Fundamentally, it is the role of the Harare City Council as the service provider to adopt/ implement these sustainable alternative sources of potable water provision for the residents. In comprehending the efficacy of prepaid water meters, it, therefore, becomes essential to acknowledge that access to potable water should remain at the core of the public service.

Developing nations are continuously faced with the challenge to ensure access to potable water supply, in enabling the human right to water to curtail the risks aligned to water-borne diseases. WHO (2012); JMP (2017) upholds that globally, one in

every three people lack access to potable water. WHO (2015); UNICEF (2016) affirm that more than 3.4 million people die annually from water, sanitation, and hygiene-related causes and 99 percent of the deaths occur in developing countries. Oxfam (2011); Majuru et al., (2016); WHO (2015) confirm that a projected number of 42 000 individuals die every week from illnesses which are directly linked to low potable water quality and an absence of access to clean potable water in developing nations. Furthermore, WHO (2015); JMP (2017) also espouse on how an additional estimated number of 663 million individuals lack access to developed sources of potable water, while the number of persons deprived of access to water of quality adequate enough for human consumption is 1.8 billion in developing countries. Hence, this study acknowledges that the adoption of effective, economic and efficient sources of potable water supply is central in realizing the significance of access to potable water supply for all. As a result, implementing/adopting alternative strategies becomes a critical factor, particularly with the implementation of prepaid water meters in which there is a higher risk of disconnection from access to potable water supply, with failure to pre-charge (Majuru et al., 2016; Gerlach & Richards, 2010; Carion et al., 2012). Subsequently, the Harare City Council should adopt alternatives that will enable access to potable water to the residents upon disconnection from prepaid water meters.

Developing countries are constantly faced with service delivery challenges and they have resultantly been looking at alternative and sustainable means to efficiently and reliably deliver services. Most developing countries have adopted prepaid water metering and have since been plagued with the challenge to effectively maintain them, whilst some have managed to sufficiently deliver results in mitigating the potential risks in the absence of potable water provision (Von Schnitzler, 2013; GOB, 2012; Jenny and Nilson, 2012; Xie, 2006). However, the dynamics surrounding prepaid water meter implementation and in particular the adoption of alternative potable water sources and comprehending the quality of these sources in developing nations have not been adequately documented in previous studies (Von Schnitzler, 2013; Abu-Hilou & Jarrar, 2012; Mudzingwa, 2015; CHRA, 2015). Given the fact that, prepaid water provision remains controversial since proponents argue it to be a revenue generation strategy, whilst critics bemoan its technical unreliability, high maintenance costs and a system that penalizes poor customers (Abu-Hilou & Jarrar,

2012; Ruiters, 2011). This is a clear indication that service providers should implement/adopt alternative and sustainable sources of potable water provision given the complex dynamics surrounding prepaid water meter implementation in developing nations (Drakeford, 1998; BMA, 1994; OFWAT, 1998; JMP, 2017).

Grant and Bimha (1984); Barlow and Clarke (2002); Matabvu (2016) posit that the implementation of alternative potable water strategies is critical because the absence of potable water has negative long-lasting effects on humanity. These effects are most evident in women who are arguably in charge of potable water access and provision in the household (Xie, 2006; Xali, 2002; Chikozho, 2006). This study proceeds from the foundation that consistent supply of potable water is undoubtedly the most imperative service to be considered in developing nations, due to its inalienable nature. Ruiters (2011); Bond (2002); Bakker (2002) maintain that, unlike, other public services like, electricity, potable water has no sustainable substitutes, hence the core of this study that the Harare City Council should maintain social equity by adopting alternative measure for low-income earners, pending prepaid water implementation to ensure their efficacy. Essentially, there is a need for the government of Zimbabwe to stimulate more research which advises applicable and solid legislative frameworks with regards to potable water technologies, with the implementation of prepaid water meters to warrant access to water supply.

Mudzingwa (2015); Njoh (2003) confirm that there are other alternative strategies on how local authorities can sustainably deliver potable water, which implies that governments should also explore alternative strategies of potable water service provision. This study comprehends how the implementation of prepaid water meters can ensure effective and efficient water provision of potable water by recommending on appropriate alternative adaption strategies for potable water provision. Additionally, this implies that ensuring access to potable water supply is fundamental for individual domestic households, however there is also need to ensure access to potable water supply for public institutions such as health and education institutions because intermittent water supply also has adverse effects on these institutions (Majuru et al., 2011; Majuru et al., 2016; UNICEF; Vásquez & Espallat, 2016).

Simultaneously, this study confirms that there is a need for the Harare City Council to augment on the realization of the need to adopt/implement sustainable alternative

sources of potable water supply, pending prepaid water implementation. This implies that the provision of clean and accessible potable water is essential to every government because it is a central element of human life. Chapter 4, Section 77a of the Constitution of Zimbabwe (2013) asserts that water is central to human life and dignity; while Section 77b notes that every individual has the “right to safe, clean and potable water”. Goal six of the Sustainable Development Goals (SDG’s) of the Post-2015 Agenda posits that “developing and developed countries should ensure the availability and sustainable management of water and sanitation for all by 2030” (WHO, 2015; JMP, 2017). Goal six of the SDG’s further emphasizes that all developing nations must achieve universal and equitable access to safe and affordable drinking water for all by 2030. This is a clear reflection on the significance of potable water in the everyday lives of humans, which signifies the importance of implementing alternative sources of potable water provision due to the complexities surrounding prepaid water metering.

Therefore, it becomes essential for the government of Zimbabwe to ensure that they successfully enable sustainable access to potable water supply, particularly for low-income households so that they are not alienated upon disconnection of water supply. Savenije and Van der Zaag (2008); Sorenson et al., (2011); Wutich et al., (2016) accentuate that, failing to warrant access to potable water supply has a trickle effect particularly on women and the girl child, who bear the brunt of ensuring availability and access to potable water supply. This study argues that the integration of new technologies in the potable water structures has to be directly hinged upon meeting the demands and basic water needs of the general public (Damanpour & Wischnevsky, 2006; OXFAM, 2011; WB, 2016). Additionally, this study confirms that prepaid water implementation has to incorporate cost-effective alternative sources of potable water provision. This simply implies that public service provision tools, especially in the potable water systems should always have counteractive modalities which mitigate any negative socio-economic implications to which the residents might be exposed to pending prepaid water implementing for potable water provision.

5.2 PREPAID WATER METERS: COUNTRIES AND EXPERIENCES

It is constructive to engage in retrospection in similar situations in other countries, so as to proffer feasible recommendations on the efficacy of the prepaid water metering policy in Harare. Countries like Uganda, United Kingdom, India, Palestine, Namibia, Zambia, South Africa, Malawi, and Botswana exemplify the demerits and demerits of the varying dimensions of prepaid water meter implementation policies for potable water provision. The aim of this study was to comprehend the efficacy of prepaid water meters by highlighting on the irregularities that exist between the implementation of prepaid water meters as a revenue generation tool against the provisions of the varying legislative frameworks on the human right to water. Interestingly, literature seems to suggest that prepaid water implementation has more demerits than merits on the public, more especially for the low-income earners (Von Schnitzler, 2013; Matabvu, 2016; Berg & Mugisha, 2010; Bakker, 2007; WHO, 2010).

Resultantly, Chatiza (2016); GWP (2000) confirm how the inception of prepaid water meters has continuously been argued to be a move from a welfare framework to a market-oriented framework due to the aspect of advance prepayment, which nullifies the human right to water. This study, however, categorizes prepaid water meters as technological tools that have been introduced by the Harare City council as a potable water provision tool that is punitive and ignorant of the human right to water. This discernment is justified because a policy has to evolve in a transparent manner whose outcome and objective clearly reflects on public participation and stakeholder consultation (Grant & Bimha, 1984; Chikozho, 2006; Nhede, 2012, International Water Association, 2004). This study further argues that implementation of public policies should, therefore, present a meaningful balance between a welfare framework and market orientation, thus prepaid water meter implementation should have the same reflection.

5.2.1 Koboko: Uganda

Prepaid water meter implementation proved to be more strenuous as compared to conventional meters in Koboko, Uganda. Service providers miscalculated the essence of sustainably retaining an effective prepayment system in terms of required maintenance and support systems (Jenny & Nilsson, 2012). Beyond the regular

disregards of maintaining a reliable supply of safe and potable water, the prepayment system was challenging to manage, with all the interdependent automated and motorized software components at each site (Berg & Mugisha, 2010). This meant that a simple fault on a prepaid water meter would shut down the entire supply of water that customers would have already paid for or it would alternatively provide free water (Jenny & Nilsson, 2012). The prepaid water metering system also requires credit vendors who are well equipped to efficiently service and manage the system because credit transfer devices are needed in administering the physical tokens or smartcard. It is essential to acknowledge that, at the core of a prepayment system are customers *inter alia* citizens whose confidence in the system should also be earned, hence, public consultation and regular monitoring and evaluation are essential to track performance and sustainable consumption (Berg & Mugisha, 2010).

It becomes significantly essential to highlight the impact of public participation in the implementation of policies that directly influence basic rights (White, 1990; Kayaga, 2008). This is against the background of the scale of prepaid water meters which is relatively inclined to the demerits, given the experience, in Uganda. The high level of susceptibility to malfunctioning in Uganda led to the argument that prepaid water meters were not sustainable for potable water provision as compared to public stand posts with conventional water meters, albeit at lower revenue collection. Berg and Mugisha (2010) affirm that the selection of the most appropriate potable water provision tool in Uganda would have been better structured through citizen input. Matabvu (2016) affirms that from a market orientation perspective, prepaid water meters are essentially implemented to enable cost recovery which results from non-payment of services, which is deemed to be anti-poor.

The service provider in Uganda ultimately enabled public participation to undertake a cost-benefit analysis with the residents, in weighing the pros and cons of yard taps, public standpipes, pending post and prepaid water meters. The indication from the public participation revealed that residents preferred prepaid water meters, only if sufficient funds were available to address the susceptibility to malfunctioning (Chaminuka & Nyatsanza, 2013). Residents preferred prepaid water meters because they argued it would enable them to plan and budget for their potable water household consumption. However, it was still logically essential to factor in the

financial constraints of the low-income households by blending in the appropriate potable water provision tools for all.

5.2.2 Mumbai: India

In Mumbai, India both activists and engineers conveyed apprehension over the unsuitability of the city's infrastructure to efficiently sustain prepaid water meters (Bakker, 2007). The apprehension arose over how expensive the meters were to replace as well as their fragility in terms of being easily susceptible to malfunction as compared to the post-paid meters (Bakker, 2007). The extensive dialogue between the municipal authorities and vocal human rights activists eventually led to the withdrawal of prepaid water meter implementation for potable water provision (Von Schnitzler, 2013). Bakker (2007) asserts that the proposal for prepaid meters still lies undeveloped in Mumbai's city council offices as it awaits a new alternative adaptation strategy that can be implemented as a reliable option through which all citizens can effortlessly access potable water. Nevertheless, studies suggest that even if prepaid water meters had been implemented in Mumbai, they would have faced imminent confrontation from the material infrastructure upon which it would have been installed (Von Schnitzler, 2013). This is because the prepaid water metering system requires a very technical software and hardware to sustain the system because it is inclined to malfunctioning. Studies further suggest that the prevailing potable water network in Mumbai keeps producing social and material effects that are stalling the progress of prepaid water meters as an independent technology of potable water provision to the public in India (Von Schnitzler, 2013).

5.1.3 Al-Jaroshiya: Palestine

The Palestinian Hydrology Group (PHG) protested against the implementation of prepaid water meters in Palestine, citing the implications of the negation of the human right to water for the low-income earners (Abu-Hilou & Jarrar, 2012). Their argument was that the consumption gap between the rich and the poor would be widened and potable water would become a commodity, thereby affecting the poor the most. Studies provide evidence that during that period when prepaid water meters were implemented in Palestine, a number of households lived in extreme poverty and this meant they would immensely be affected by the implementation of prepaid water meters (EWASH Fact Sheet 5, 2009). Life Source's findings confirm

that there was no alternative adaptation strategy implemented to cushion households in extreme poverty and hence their human right to potable water was being repudiated (EWASH Fact Sheet 5, 2009). While proponents are still pushing for the implementation of prepaid water meters in Palestine communities, alternative adaptation strategies for those who cannot afford to prepay for water have not yet been prompted (Abu-Hilou & Jarrar, 2012).

Mudzingwa (2015); Chatiza (2016); JMP (2017) affirm that it is imperative to educate citizens on their human right to potable water as a prerequisite to consumer satisfaction. Simultaneously, Drakeford (1998) espouses that it is crucial that the ordinary citizens are able to realize the implications of water privatization and to gradually comprehend the relations between prepaid water meters and water privatization in making an informed position. Amidst all the mayhem, human rights activists also need to be actively involved in devising alternative adaptation strategies to ensure multi-stakeholder engagement in the selection of a potable water provision tool that best suits their needs (Abu-Hilou & Jarrar, 2012). The PHG disputed the privatization of potable water, adding that the government should initiate other alternative adaptation strategies that will guarantee the durability of potable water supply and the reach of it to low-income families (Abu-Hilou & Jarrar, 2012).

5.1. 4 Lusaka: Zambia

Peter Rodseth, the Managing Director of Utility Systems noted that Lusaka Water was succumbing to loss of revenue due to 45% of non-revenue water prior to prepaid water meter implementation (Mudzingwa, 2015). Thus the water meters which are designed and produced in South Africa were arguably implemented to reduce non-revenue water and promote user accountability. However, in the low-income urban areas of Lusaka, Zambia a small number of residents are still able to source potable water from the public water points and private water vendors; hence a greater population of the citizens still lacks access to quality and affordable potable water (Carion, Hasse, Jakperuk & Pallier, 2012). Although a growing number of people need potable water services, not many can afford them and some simply do not even want to pay for potable water services at all (Dugard, 2010). Resultantly, water service providers face overwhelming contestations, amongst which is the difficulty of meeting the ongoing costs of delivering safe and affordable potable water

to the rapidly growing urban populations, who cannot afford to pay for the public services (Chatiza, 2016).

In response, to non-payment, Lusaka Water proceeded to implement prepaid water meters under the premise of improving low collection rates and scanty income to meet the service delivery expectations for potable water provision (Carion *et al.*, 2012). An average of twenty-seven thousand prepaid water meters has been implemented by the Utility Systems in Zambia since the pilot project in 2012 (www.utility-systems.co.za, 2015). The residents of Lusaka are able to purchase potable water credits from various outlets using a token, in the same manner as prepaid electricity, through the provisions of the Utility Systems. However, Mudzingwa (2015) confirms that the error Lusaka water made was assuming that there would be no risk of arrears because customers would be involuntarily forced to prepay for a service. Assuming that customers would be obliged to pay created a prospect of healthier cash flows which were meant to fund wider potable water coverage for Lusaka Water (Carion *et al.*, 2012). Inevitably, prepaid water meter implementation has been facing opposition from residents who are arguing that the meters are compromising the human right to water for those who cannot afford advance payment when credit is exhausted, thereby risking closed potable water supplies (Dugard, 2010).

The Water and Sanitation Program (WSP) still sustains that, “A big benefit of prepaid water meters is that customers promptly react to leakages to save their credit” (WB, 2015). Lusaka Water retains the ability to maintain the metering system which is argued to be leak and tamper-proof, in enabling the revenue accrual and potable water provision to all (www.utility-systems.co.za, 2015). Conclusively, a greater population of the citizens contended that the meters embodied the commoditization of water which they associated with the exclusion from services for those who could not pay (Carion *et al.*, 2012).

5.1.5 Mzuzu: Malawi

Demographia World Urban (2016) confirms that Mzuzu is a city with an average population of 128,432 which is situated in the northern province of Malawi. The Demographia World Urban (2016) further notes that over thirty percent of the aforesaid population lives below \$2 per day and the better part of this population

lives in informal settlements. However, studies conducted in Malawi revealed that some residents preferred post payment to prepayment because it gave them ample time to pay for the water they used on a monthly basis (Thompson & de Wet, 2013). Gerlach and Richard (2010) note that the installation of prepaid water meters in Mzuzu facilitated the drop in average water consumption because residents became more conscious of their consumption, due to the conception of prepayment. Instantaneously, prepayment also proved to be a challenge for those who could not afford to buy more credit to purchase potable water units (Thompson & de Wet, 2013). However, proponents of the prepayment system felt they were in control of their consumption and were not anxious about the unaccounted for post-payment bills because prepayment was more transparent than post payment bills and estimates (Thompson & de Wet, 2013).

Against the background of these dynamics prepaid water meters proved not to be an overnight solution to the challenges of serving low-income settlements in Malawi. This is because the technological infrastructural set up was also quite costly, still maturing and it was inclined to technical faults which were not sustainable for potable water provision to the public (Gerlach & Richard, 2010). Consequently, these technical faults led to self-disconnections which resulted in lack of access to potable water for households that were resultantly exposed to waterborne diseases (Gambe, 2013). Hence, this study argues that improved alternative adaptation strategies are necessary for the Harare City Council, to diminish inconvenience for the low-income earners when they cannot prepay for potable water, this also applies to other developing nations that intend to implement prepaid water meters. Gambe (2013); Nhema and Zinyama (2016) advance that prepaid water meters are argued to exemplify neo-liberal thinking and are seen as compromising basic human rights by making access to water only upon prepayment. However, Matabvu (2015:4); Chatiza (2016) contends that it is not necessarily helpful to dismiss prepaid water meters as a technology that only fundamentally violates human rights because there is also a direct link that exists between the commoditization of water and the impacts of cost recovery on poor households. In light of this discussion, prepaid water meters were argued to be punitive on the poor in Malawi because the poorest households were generally targeted for prepayment and they were adversely affected (Thompson & de Wet, 2013).

5.1.6 Windhoek: Namibia

The Department of Infrastructure, Water, and Technical Services for Windhoek in Namibia carried out a pilot study for prepaid water meters in informal settlements which were commonly populated by rural inhabitants, whose greater population was unemployed and lived below the poverty datum line (WHO, 2015). The households in these informal settlements are constructed from corrugated iron and the general household size ranges from five inhabitants dwelling in a single room (Demographia World Urban, 2016). These informal settlements were initially serviced by conventional meters which dispensed free water which was collectively paid on a monthly basis. Challenges associated with non-payment for services continuously arose, since some community members enjoyed potable water services at the expense of those who would pay up the shortfall. Arguably prepaid metering enables payment prior to the use of potable water and 73% of the population that was piloted maintain that prepayment was more costly (Mapedza & Geheb, 2010). Their argument was that financial constraints excluded them from accessing potable water because when credits run out they would be unable to access potable water. However, the remaining population that did not run out of credit argued that prepaid water meters prompted them to financially plan for their potable water consumption (Hove & Tirimboi, 2011).

A major shortcoming of prepaid water meters in Namibia is that they were also electrically powered which implied that if the electricity grid had no power for a period of seventy-two hours then the city would also have no water supply for seventy-two hours (Gambe, 2013). Studies sustain that constant supply of water is a precondition for prepaid water meters to accurately function since the meters do not fully function with water supply disruptions because air and grit get sucked into the network after a supply interruption thereby causing system malfunction (Nhema & Zinyama, 2016; Gambe, 2013). The Department of Infrastructure, Water, and Technical Services for Windhoek also exposed how gravel would jam the valve and turn counters in the meter, thereby exhausting credits without even supplying any water (Carion *et al.*, 2012). It is a point to note that, this vulnerability makes prepaid water meters unbecoming for countries considering prepaid water metering to recover revenue in the absence of regular water supply.

In this perspective, the Namibian water service providers diverted the focus on prepaid water meter installations from areas without a constant water supply to areas with constant supply and water pressure levels that the meters could tolerate (Nhema & Zinyama, 2016). Resultantly, in those areas where there is a premonition to service interruptions, the Namibian water service providers decided to pursue other alternative adaption strategies to ensure that the potable water needs of every citizen were efficiently and adequately met. The offices that sold potable water credit would only open during the week from 8 am to midday, thereby inconveniencing residents who would exhaust their credit during the weekend (Mapedza & Geheb, 2010). The research team that piloted the project ultimately recommended that the working hours for the sales offices be extended, such that they would open even during weekends. The team also noted the essential role of a subsidization scheme before fully implementing prepaid water metering in providing for the socially disadvantaged to ensure that there was no violation of the human right to water (WHO, 2015).

5.1.7 Tlokweng: Botswana

Tlokweng is an urban village with a population of 35,982 inhabitants which is located close to the capital city of Botswana, Gaborone (GOB, 2012). Most rural communities in Botswana have always accessed potable water supply from communal standpipes and this was also predominant in Tlokweng. Potable water supply from communal standpipes was provided to all residents free of charge, but pending the water supply challenges, the government had to devise sustainable measures in conserving the scarce water resources (Kalabamu & Thebe, 2005). In the conservation of water resources, prepaid water meters were implemented and each household was given a tag which was loaded with credit that was calculated based on household consumption estimates. Upon implementation of the prepaid water meters, households were cautioned to consume water within their subsidy because they would pay for any consumption that exceeded the allocation.

Thus, Njoh (2003) asserts that prepaid water meters were implemented to manage water demand in rural communities since they were succumbing to NRW due to the free of charge policy. This study acknowledges that the success of prepaid water meter implementation in Tlokweng has motivated the government to extend the roll-

out to urban households in Botswana (GOB, 2012). This is despite the fact that prepaid water implementation in Tlokweng has constantly succumbed to a system failure which normally deprives the households of accessing potable water (Matabvu, 2016). It is plausible to note that, initially most households would exceed their subsidy allocations but they have since learned to conserve water resources due to the “punitive measure” of paying for excess consumption. As a result, prepaid water metering enabled the conservation of water in Tlokweng, due to the conscious awareness of payment for every drop of potable water consumed.

5.1.8 Birmingham and Liverpool: The United Kingdom

The UK’s Housing Act of 1985, espouses that a household without potable water is deemed not fit for human dwelling and the Environmental Protection Act of 1990 further sustains that a house without potable water is a statutory nuisance OFWAT (1999). This study maintains that the implementation of prepaid water meters was detrimental on the human right to potable water for low-income earners in Birmingham and Liverpool in the United Kingdom (England and Wales High Court, 1998). Drakeford (1998); OFWAT (1999) confirm that, due to the detriments of prepaid water implementation on low-income earners, the United Kingdom government completely forbade the installation of prepaid water meters on domestic households. Drakeford (1998) also ascertains that “the connection between prepayment purchase, debt, and hardship in the water sector industry is indisputable”. This was evident with the escalations of water-borne diseases that were directly aligned to prepaid water implementation and the British Medical Association concluded that “Disconnections of domestic water supplies for reasons of non-payment should be made illegal” (BMA, 1994).

The BMA (1994) affirmed that prepaid water implementation made low-income earners vulnerable to health burdens, thereby risking the entire population to water-borne diseases. Given this background, Drakeford (1998) supports that prepaid water meters were so detrimental to an extent that the government ultimately banned them. This is significant in reflecting on prepaid water meter implementation by the Harare City council, considering the United Kingdom has a stronger economy than Zimbabwe’s own yet the former country banned their implementation for potable water provision on domestic households based on the proffered concrete empirical

evidence. Against this background, it is safe to conclude prepaid water meter implementation will possibly be a threat to the Harare residents given the context of Zimbabwe as a failed state pending the socio-economic crisis (WB, 2015; Nhema and Zinyama, 2016).

5.1.9 Johannesburg: South Africa

Harvey (2005); Sorenson et al., (2011); Wutich et al., (2016) argue that, prepaid water meters are a technology implemented to coerce the poor to pay for services and the root of this study is to comprehend the efficacy of prepaid water meter implementation for potable water provision in the context of the human right to water. One of the highly populated cities of South Africa, Johannesburg implemented prepaid water meters with the emergence of privatization of potable water services (Demographia World Urban, 2016; Bond, 2008). Subsequently, the meters were implemented as a potable water demand management tool to control potable water consumption, however, the bearing on the citizens was immensely negative (Mudzingwa, 2015). Prepaid water meters perpetrated the prevailing adversities on the low-income settlers in Johannesburg, Orange Farm who argued that the meters were disproving their constitutional right to potable water, by individualizing the harm of potable water access within low-income households (Gambe, 2013). The Orange Farm residents also argued that the installation of prepaid water meters was never communicated to the community residents but it was simply approved by the municipal councilors who arguably imposed them on the residents (Mudzingwa, 2015).

In this milieu prepaid water meters exacerbated hardships on low-income earners by concentrating them on the poor people as a punitive measure to address non-payment. However, Xali (2002); Ruiters (2011) contend that overpricing of potable water services is the key restraint which resulted in the non-payment of services. In this contextual light, the unavailability of potable water due to the installation of prepaid water meters led to inadequate hygiene systems which exposed households to waterborne diseases (Bond, 2008). Simultaneously, the implementation of prepaid water meters led to an increase in environmental pollution and land degradation which was facilitated by uncontrolled effluent discharges and scarcity of water (Bond, 2008).

On another note, the Johannesburg Metropolitan municipality maintains that it actually saved R800 million in revenue during the period when prepaid water meters were implemented (Gambe, 2015). The downside of saving such hefty figures of money was a cholera outbreak which killed over 200 people during the pilot project, thus highlighting on the direct correlation existent between prepaid water meter implementation and water-borne diseases in the absence of alternative strategies of potable water (Mudzingwa, 2015). Prepaid water meter implementation in Johannesburg, was also associated with exorbitant registration and connection fees and the system would frequently break down, which left residents without potable water for extended periods (Mudzingwa, 2015). Consequently, low-income households reverted to alternative but unsustainable sources of potable water, thereby demonstrating the drawbacks of prepaid water meters which need to be addressed prior to implementation. However, Chatiza (2016) posits that the forte of South Africa as the pioneer of prepaid water meters in Africa is that, it has a Free Basic Water Policy, which subsidizes low-income households. Hence, Zimbabwe will have to factor in the perspective of free basic water allocation as an alternative strategy to ensure that the right to potable water will not be invalidated.

5.1.10 Harare: Zimbabwe

The Harare City Council is gradually introducing prepaid water meters through tendering companies which are meant to supply prepaid water meters by targeting households around designated Harare residential areas and the Central Business District (Matabvu, 2016:4). The Harare City Council sustains that prepaid water meters are an inventive tool meant to empower the residents to optimize potable water use and aid the city council to objectively deliver potable water through revenue collection (Matabvu, 2015). Conversely, despite the meters being “inventive”, they are not yet available in adequate amounts of stock in Zimbabwe because they are very costly with a price range of US\$200–US\$350 per meter (Matabvu, 2016:4). Being conscious of the cost of a prepaid water meter is core since the conventional and cheaper billing system is decrepit and has not been amply restructured since 1980, how then would the government financially sustain the new highly priced meters.

The Harare City Council further advances that prepaid water meters promote the cognizance of accurate budgets because conventional meters have been producing insecure revenue inflow due to estimated bills (Chatiza, 2016). This study is aimed at comprehending the technical capacity of the Harare City Council in sustaining the human right to potable water, through the implementation of prepaid water meters as alternative adaptation strategies of potable water provision in an era when Zimbabwe is yielding to a socio-economic meltdown. Mudzingwa (2015) also maintains that the predicament is that, the Harare City Council is placing its confidence on the debt recovery process and ignoring its main objective to efficiently and effectively provide potable water sustainably and objectively. Xali (2002); Nhema and Zinyama (2016) affirms that cost recovery generally has the potential to undermine human rights and this study argues that cost-recovery at the expense of the citizens is not necessarily sustainable and is unlikely to succeed given the high unemployment pending the context of Zimbabwe as a failed state.

Contenders of prepaid water meters agree that potable water should be free, which this study argues to be irrational because revenue must be collected to support the infrastructure necessary to collect, clean, and distribute water McDonald (2002). In order to collect revenue from the public, households would have to be metered prior to usage, and this study argues that this could prove to be difficult in the current socio-economic state of Zimbabwe. Chatiza (2016) argues that prepaid water metering warrants the responsibility of each household in ensuring payment is specifically aligned to amount consumed, however, it is underpinned by more demerits than merits.

5.2 MATERIALS AND METHODS

Rosnow and Rosenthal (2008) acknowledge that qualitative research encourages an interpretation of sense, acquaintance, and observations. Kumar (2005) defines quantitative research as an inquiry of a phenomenon enabled by investigating a concept that can be measured arithmetically and evaluated statistically. This study was advised by the mixed method approach in integrating both qualitative and quantitative research instruments. Triangulation enabled the author to answer the research question from diverse angles. Leedy (2005) maintains that triangulation in research has the ability to support the researcher to depict an objective analysis of

the data and findings of the study. The qualitative research method prompted the author to use purposive sampling to select the key informants from the Harare municipal authorities who were in charge of the prepaid water metering implementation process. Purposive sampling was also used in selecting the participants from civil water organizations because they are the catalysts between the Harare residents and the Harare City Council authorities.

The basis for using purposive sampling was to allow the author to select the respondents who have better knowledge of the efficacy of prepaid water meters. Alternatively, quantitative research prompted the author to use systematic sampling in selecting the Harare residents because it adopts simple random sampling at the beginning in order to establish a sampling interval which creates a quasi-random selection method. The author identified the first respondent from the Harare City Council registry and the remaining residents were selected using the sampling interval of the 5th element on the whole population from the Harare City Council registry. The estimated representative sample size for the survey was derived from the Raosoft sample size calculator for the maximum variability of the sample based on the population of Harare (Raosoft, 2004).

Dirwai and Gwimbi (2003) note that there is a wide range of data collection instruments that can be used in obtaining data and among these are interviews, intake forms, questionnaires, and documents. Kumar (2005) maintains that the selection of these data collection instruments precisely depends on the choice of the research method, the study topic and the availability of data. Hence from this discourse, structured questionnaires were self-administered to 271 Harare residents because questionnaires are most appropriate when establishing a relationship between variables when there is a large sample involved. Face to face and telephonic key informant interviews with ten Harare City Council officials were undertaken to understand their technical capacity in providing alternative adaption strategies of potable water provision to the residents. Two focus group discussions, with each group consisting of ten participants, were held under the guidance of a moderator. These participants were inclusive of the Combined Harare Residents Association and Harare Residents Trust officials who form the civil organizations that are key catalysts between the Harare City Council and the Harare residents. The author used descriptive statistical methods through SPSS to analyze the findings of

the study as gathered from the structured questionnaires that were administered to the residents. Content analysis was used to analyze the focus group discussions and the interviews because it gave a descriptive presentation of data (Bak, 2004). Thematic analysis was ultimately used in discussing the common and recurrent themes from the data gathered.

Table 5 Designation of respondents

DESIGNATION OF RESPONDENTS	TARGETED RESPONDENTS	INSTRUMENT	ANALYSIS
Harare City Council authorities	10	Key Informant Interviews	Thematic Coding
Civil water organizations officials	20	Focus Group Discussions	Content
Harare residents	271	Questionnaires	SPSS
Total Population	301		

Source: Own Illustration (2017)

5.3 RESULTS AND FINDINGS

This section of the study gives an explicit discussion of the findings which were gathered from the respondents and analysed to make sense out of it in an attempt to make conclusive recommendations on the efficacy of prepaid water meters for potable water provision in the Harare City Council.

5.4 PERCEPTION OF RESIDENTS TOWARDS THE EFFICACY OF PPWM'S

Content and thematic analyses from the secondary documents of the comparative study of the developing and developed countries underscored in this section enabled the formulation of groundwork in determining the technical capacity of the Harare City Council in implementing prepaid water meters. The author selected each of the countries by centering the argument on the datum that each country implemented prepaid water meters and had varying experiences and varying results. As a result, the prepaid water meter experiences and lessons drawn from the countries clearly highlight on the different dynamics from which the success of prepaid water meters is dependent upon in-order for Harare City Council to cultivate the efficacy of prepaid water meters. The secondary study informed the comparative study which certainly

provides remarkable indicators which point towards the technical capacity or its lack thereof within the Harare City Council in mitigating the failure to ensure access to potable water supply, pending prepaid water implementation.

The study also revealed that based on the residential areas engaged in the survey in Harare, the efficacy of PPWM's is rated low (27.2%) to the uncertainty of (30.6). Thirty-five percent of the respondents in high-density areas disagreed on the efficacy of PPWM's capacity of the City of Harare. Thirty-one percent of the medium density respondents were not sure whilst 33.3% of the low-density respondents were not sure and disagreed, with 25% of CBD respondents also disagreeing on the efficacy of prepaid water meters in the Harare City Council. This is a clear indication that the residents lack utmost confidence in the technical capacity in the City Council in sustaining prepaid water meters; hence the adoption of alternative potable water sources is essential. In highlighting the core components underlying service provision, it is essential to be mindful of the technical sustainability of the public service provider (Smith & Hanson, 2003; Castro and Morel, 2008; Berg & Mugisha, 2010; Allen et al., 2006; Dugard, 2010; Gilbert, 2007).

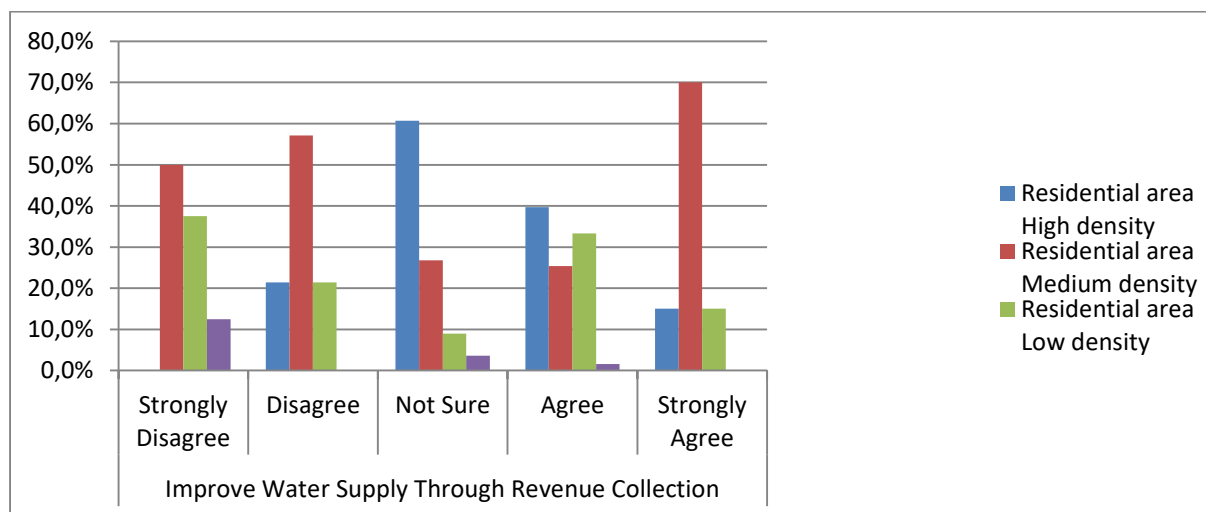


Figure 33 Perceptions of citizens towards the efficacy of PPWM's

Schwartz (2008) affirms that water commoditization and privatization has led public service providers to adopt private sector water principles that strive for commercial viability, however, the downside is that the public sector arguably lacks the technical capacity to adequately undertake some of these principles. Likewise, Baietti et al.,

(2006) reflect on the essence of the technical capacity and ability of a service provider as being a key characteristic of a well performing potable water service provider.

The Harare City Council also said that:

“The discussion on prepaid water meters has not gone smoothly since inception with residents’ perceptions being inevitably mixed. Some residents view the introduction of prepaid water meters as the city’s attempt at raising financial resources from other streams which it will unaccountably and principally spend on administrative expenses. There is a category of residents that barely understands what difference prepaid water metering will bring either because they presently lack reticulated water services (e.g. high-income areas that are uncovered by present city infrastructure, informal settlements, high-density areas where service has been discontinued for a variety of reasons like Mabvuku and Tafara).”

Another Harare City Council Official indicated that:

“Prepaid water metering appears to be more about assuring revenue collection than an immediate solution to water services delivery. This view arises from the reality of limitations facing the city’s water systems due to a technical capacity deficit (Harare does not produce enough water and does not reach all residents with what it produces. The city has in fact piloted prepaid water metering and with many other Councils having piloted the system there is no shortage of engineering and other technical competences to install the system. In short, the city has the technical capacity.”

The Harare City Council explicitly illustrated that PPWM’s are actually more inclined to profit accrual than basic service delivery per se, which could be the reason why residents are hostile towards it. The respondent further espoused that Harare City

Council is presently failing to meet its daily demand of potable water provision due to a myriad of deterring factors, amongst which are NRW and infrastructural dilapidation as argued by (Matabvu, 2016; Majuru et al., 2011). However, the respondent conclusively confirmed that they do have the technical capacity to efficiently administer the PPWM, given the “success” of the pilot project which has been sustained by their expert engineers. Nonetheless, this study asserts that running a pilot project on a small sample and implementing it full scale in the context of the inalienable right to water, is a multifaceted element which the city council could have probably overlooked in determining their technical capacity to oversee the PPWM’s.

One Harare city council official was transparent enough to note that, PPWM’s have not gone uncontested by the residents who are citing total disgruntlement by the city council’s ability to effectively administer the PPWM’s. The metropolitans are arguing that PPWM’s are just a revenue generation scheme for its employee’s salaries, given the socio-economic status of the nation. Citizens are also disagreeing over the implementation of PPWM’s citing that, prepaid water meters are an infringement on their human right to potable water due to the privatization of potable water infrastructure as confirmed by (Chatiza, 2016; Nhema & Zinyama, 2016).

However, this study established that, despite these arguments, there is a portion of residents that is actually supportive of PPWM implementation because they are comparing them to the prepaid mobile phones which are effective in ensuring value for money. This study argues that comparing potable water supply to prepaid mobile phones is a gross equation, given the intensity of potable water as a constitutional and undeniable human right (Constitution of Zimbabwe, 2013; ZIMASSET, 2013). There is, however, an unaccounted for the populace of residents, that is indifferent since they have not had water for almost two decades, so the PPWM discourse is in the abstract irrelevant for them for a variant of reasons.

5.5 PERCEPTIONS OF THE CITIZENS TOWARDS HCC MANAGEMENT

Proponents of prepaid water meters emphasize on the human right to water and however, de-emphasize on the essence of the financial aspect relating to the management of potable water demand and provision (Chaminuka & Nyatsanza, 2013). Hence there lies a buffer zone in between the significance of payment for services to ensure the sustainable management of the potable water infrastructural system and the significance of an adequate management system pending prepaid water meter implementation. Chaminuka and Nyatsanza (2013:28) further assert that “in practice, a focus on volumetric issues of supply and demand, as well as considerations of utility and efficiency, persist which may not always have the interests of the marginalized upfront is necessary”. Hence, Von Schiltzer (2013) espouses how the supply and demand nexus of potable water provision, essentially requires a level of effective management to ensure continuity of the system. In the same way, Nhede (2012); Mashayamombe and Hofisi (2016) maintain on how public service management should fundamentally be carried out in an effective, efficient, economic and equitable manner because poor management derails the crux of public service.

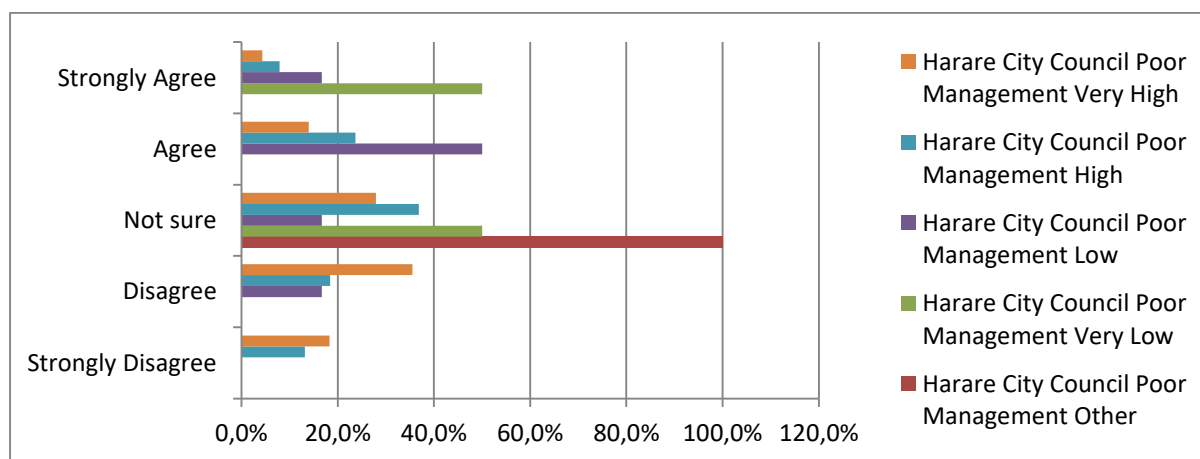


Figure 34 Perceptions of the citizens towards HCC management

Subsequently, this study also established that based on the technical capacity or lack thereof of the Harare City Council, organizational management is rated high (26.6%) to very high (65%). Fifty percent of the respondents who rated the very low

poor organizational management of Harare City Council strongly agreed to the Harare City Council technical capacity, as well as 50% who were uncertain. Fifty percent of the respondents who rated the management of Harare City Council agreed on the Harare City Council technical capacity, whilst 36.8% of the respondents who highly rated the management was not sure to the technical capacity with 35.5% who very highly rated the management agreed. This implies that the City council lacks the technical capacity to administer the prepaid water meters due to poor organizational management. Hence, this study cites that, organizational management should be addressed to ensure the low-income households will still be able to access and afford potable water through devising alternative and sustainable sources of potable water provision.

The Harare Residents Association stated that:

“I do not think HCC has the capacity because from what we have seen with the cholera outbreaks, it means the HCC does not even have the capacity at all. Imagine if the state cannot even cater for its own citizens, what capacity would it have to deliver water through the PPWM’s, which we know to be sophisticated. There are blame shifts and political party pointing and this is ultimately affecting the residents.”

A Harare Resident Association respondent confirmed that the Harare City Council certainly does not have the capability to execute the PPWM’s, citing that they are currently failing to simply deliver potable water with the basic conventional meters. Thus, their technical capacity in administering highly technical PPWM’s is not defensible due to constant maladministration which is a key factor. The respondents also noted that politics-administration dichotomy will also be a factor to consider because the city council is inundated by inept officials who shift the blame from one office bearer to the other when there is any crisis. Mudzingwa (2015; Chaminuka & Nyatsanza, 2013) note that lack of accountability due to poor governance and unconsolidated policy structures is a clear indication that technical capacity to efficiently administer the PPWM’s is an absent element within the city council.

5.6 PERCEPTIONS OF CITIZENS ON THE ECONOMIC IMPLICATIONS OF PPWM'S

In comprehending the efficacy of prepaid water meters towards implementing alternative sources of potable water provision, it is cognisant to take into perspective the economic implications of prepaid water meters for both the service provider and the service users. This is given the fact that, (Berg & Mugisha, 2010) assert how prepaid water meter advocates argue that, prepaid water meters cite cost-recovery as a key principle for selection of the water provision tools. However, Nhema and Zinyama (2016) confirm that the Harare City Council is presently in a state of financial misdemeanor due to various factors amongst which is the crumbling economic status of the country pending it's cataloging as a "failed state". As a result, the public has also not been spared from the adverse effects of a financially unstable economy. Hence this study argues that the implementation of prepaid water meters should not solely be grounded in cost-recovery because, the Harare City Council would simply be placing its hopes on the financial aspect while being oblivious of the economic demise, which would render a greater percent of the population unable to prepay (Thompson & de Wet, 2013; GOB,2012).

Hove and Tirimboi (2001:23) cite that public service providers are suffering from "confused identity" or what is termed the "schizophrenia of public enterprises", which is resulting from the failure to strike a perfect balance between the economic implications and social implications of potable water service provision. This study argues that prepaid water meters are not cost-effective in the Zimbabwean context and to further argue that even developed economies such as that of the United Kingdom even banned prepaid water implementation in domestic households due to their economic implications (OFWAT, 1999; English and Wales High Court, 1998). Thus, given the complexities of prepaid water meters with regards to economic implications, public finance management should be executed in a transparent and accountable manner which incorporates citizenry participation even at the budgeting stage. CHRA (2015) affirms that citizenry participation in public finance management and related matters should essentially integrate low-income residents because they suffer the most from any socio-economic implications from policy implementation.

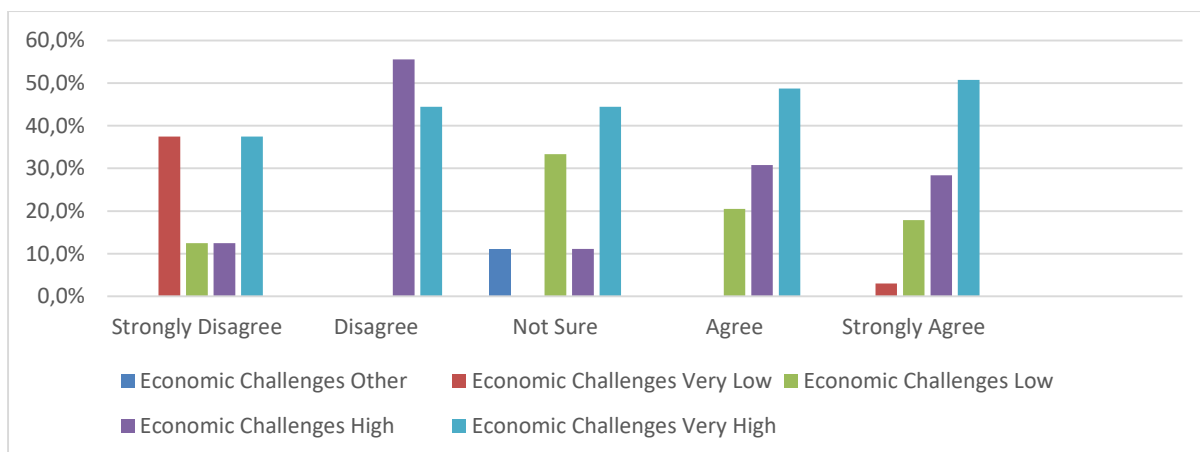


Figure 35 Perceptions of citizens on the economic implications of PPWM's

Results from the survey proved that economic challenges are perceived to be high and very high by the residents of Harare; hence the study argues that prepaid water meters would negate the human right to potable water due to the economic challenges. 51% of the respondents strongly agreed to the prepaid water meters impeding on the right to water access when taking the economic challenges into consideration, this was followed by 29.5% who also agreed to this perception. Given this background, Demographia World Urban (2016) maintains that these statistics prove that the economic situation prevailing in Zimbabwe negatively affects the low-income residents' affordability of potable water. The majority of residents in Harare are self-employed and those who are employed are either getting insignificant salaries or have gone for months without any remuneration (Gambe, 2015). Hence, with either intermittent or uncertain income it is difficult for the local residents to consistently prepay for potable water, thus the adoption of alternative potable water sources is critical in ensuring the human right to potable water is not nullified. Residents will definitely bear the brunt of prepaid water meter implementation and low-income residents will be hard hit, given the socio-economic crisis of Zimbabwe. Consequently, affordability remains a key factor because Harare City Council will not afford to sustain the prepaid water metering system since its financial position is critical, given its failure to properly maintain the existing cheaper conventional metering system (WHO, 2015).

The Harare Residents Trust said that:

“As long as the economic situation does not change, PPWM’s only worsen the current situation because people will look for other unhealthy alternatives. Look when the economy was strong we would all pay for our services, but now things are very hard. It is not like people do not want to pay voluntarily, it is the economic state. People have already begun to drill boreholes and shallow backyard wells anyway. They also say that if we use the meters we will get water, but then what happens to us without money the low-income residents, we will automatically suffer.”

The CHRA indicated that:

“They should place a ration for the low-income households, which is however not feasible, by factoring in the sustainability of free Basic Water. The best option is to eliminate prepaid water meters on residents and concentrate them on billing commercial entities.”

Based on the respondents, the study also documented that the Harare City council may be misleading the residents by telling them that they will receive potable water supply with the implementation of PPWM’s. This is a complete fallacy because Gerlach and Richard (2010); GOB (2012); Mudzingwa (2015) cite that PPWM’s do not change the source of water or the means of potable water purification. However, their possible argument could only be that PPWM’s will enable revenue generation which will, in turn, be able to maintain the potable water infrastructural setup and ensure an adequate supply of potable water to all. The respondents also noted that PPWM’s will alienate those without money from accessing water, due to their failure to prepay for the service, which has adverse effects on the health and household domestic dynamics (Hove & Tirimboi, 2011; Chiri, 2014).

The study established that the national economic crisis is a major obstacle that will deter the residents from payment because even though they might want to pay for the water they do not even have the money, to begin with. This does not come as a surprise given the fact that Zimbabwe ranks number 16 on the Global Foreign Policy’s Failed States Index of 2016 after scoring 100.5 (Nhema & Zinyama 2016). The study also established that the HRT officials are discouraging the

implementation of prepaid water meters on individual households, citing that commercial entities are in a better position to subscribe to the prepaid water meters. The HRT officials argued that free water rationing as is the case with South Africa is not necessarily practical, considering that the Harare City Council is a service provider which survives on revenue to ensure its sustainability (Mapedza & Gehab, 2010; Schouten et al., 2011).

Resultantly, the respondents revealed that the Harare city council should instead focus prepaid water implementation on commercial entities that actually consume more volumes of water and probably have accrued more debt than individual households. The HRT as the key catalyst between the Harare residents and the Harare City Council also advocated for the implementation of some form of subsidies by the government, since the government was voted into power by the people and it should in turn adequately and efficiently serve the needs of those people. The respondents further argued that the Harare city council copied South Africa in implementing the prepaid water meters for revenue accumulation. Hence, their argument is that they should also copy South Africa in implementing the free basic water policy to ensure the low-income households are not affected.

However, the Harare City Council said that:

“It is only fair to say consumers will be taught consumption management. Where there happen to be specific special needs there will be a needs-based approach and the relevant department will handle all the necessary issues. We have also dedicated communal boreholes, which are periodically checked for quality assurance.”

A Harare City Council official indicated that they do not necessarily have a particular devised strategy to cater for the low-income households that would probably exhaust their credit without money. The study further established that the Harare City Council will, however, take it upon itself to engage the public in raising awareness over potable water conservation and consumption to avoid potable water wastage and ultimately running out of credit. The respondent also indicated that in the event that there are causes of concern, the department of social welfare is available to cultivate a means test for those low-income households which will be affected. The respondent argues that the mandate of the Harare City Council as a service

provider, is to make sure they efficiently and effectively deliver potable water to the public and social welfare falls out of their scope. However in the event that the residents might encounter any challenges with the prepaid metering system, the Harare City Council has dedicated communal boreholes in every high-density suburb, which are periodically serviced to ensure quality assurance is maintained. However, residents argue that most of these communal boreholes were donated by non-governmental organisations and the HCC has not been maintaining or servicing them (CHRA, 2015).

5.7 PERCEPTION OF CITIZENS TOWARDS THE ADOPTION OF ALTERNATIVE STRATEGIES

Given the economic implications cited above, the public service provider has to cushion the needs of the public, particularly the low-income households in light of the current socio-economic status. DBSA (2001); Harvey (2005); Heymans et al., (2014) argue how it is essential to ensure the adoption of sustainable alternative potable water sources because residents risk disconnection of supply which normally leads them to resort to unsustainable sources like shallow dug wells, unregulated water merchants or unprotected backyard boreholes as pictured below. The use of these unsustainable alternative sources exposes the residents to an innumerable number of water-borne diseases as proven by what transpired in South Africa upon prepaid water implementation (Xali, 2002; Bond, 2002). The case is even worse in Harare, pending the unending waste-water pipe bursts, roadside garbage disposal and non-revenue water in residential areas which are risk factors to these shallow dug up wells and boreholes which become susceptible to microbial contamination (Chatiza, 2016; Mtisi & Nicol, 2003; Jonga and Chirisa, 2009). Hence the more reason why the Harare City Council should fundamentally ensure that it implements or adopts alternative and sustainable sources of potable water provision to curtail the possible effects of prepaid water meters, in the absence of the alternatives (ZIMASSET, 2013; Constitution of Zimbabwe, 2013).

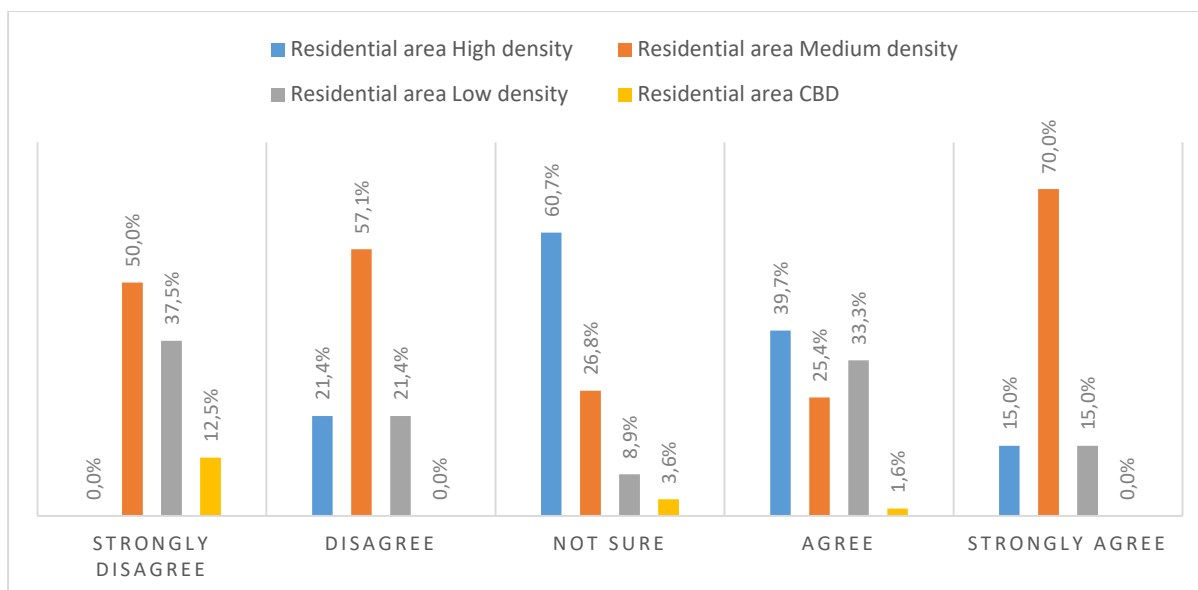


Figure 36 Perception of citizens towards the adoption of alternative strategies

The graphical presentation above reveals that, out of the total 271 respondents, 46.9% agree as well as 21.1% strongly agree that the adoption of alternative strategies is fundamental to the implementation of prepaid water meters in the Harare City Council. The graph shows that most of the respondents that strongly disagreed on the adoption of alternative adaption strategies were from medium density areas (64.3%). This was followed by 71.4% out of the total who disagreed from medium density as well as 45.7% from low density who were not sure on whether the Harare City Council should adopt alternative sources of potable water provision. This is explained by the fact that, low and medium density residents already have alternative adaption strategies in the form of secured individual boreholes and water tanks which constantly supply them with potable water (Mudzingwa, 2015; CHRA, 2015). Hence, alternative sources are certainly the least of their worries. However, most of the respondents who agreed to the adoption of alternative adaptation strategies were from high-density areas (48.8%). Nhema and Zinyama (2015); World Demographia Urban (2016); Gambe (2013) note that, most of the residents who are advocating for alternative sources are from the high-density areas because, of the tough means through which they currently access and afford potable water, meaning they would be the most affected by prepaid water meter implementation. In comprehending the efficacy of prepaid water meters for potable water provision, this study explicitly states that it is essential that the Harare City

Council should adopt or implement sustainable alternative strategies for the public to ensure they still have access to potable water supply.

The pictures below are a clear testament that the Harare City Council will definitely need to drill more communal boreholes and adopt sustainable strategies to ensure adequate access to potable water supply. Courtesy of CHRA (2015) the images were taken in Budiro, which is a high-density residential area in Harare, whose greater population consists of low-income households. Likewise, this study argues that the Harare City Council has to ensure the implementation/adoption of alternative sources to ensure the human right to water is not negated upon disconnection as outlined below. Possible alternatives which this study recommend the Harare City Council to adopt/implement:

- Maintain and drill more communal boreholes
- Employ a means test (Needs-Based Approach)
- Implement free basic water policy (Human Rights-Based Approach)
- Caution residents on potable water conservation
- Enable advance Credit
- Drill communal boreholes
- Rainwater harvesting during rainy seasons
- Grey-water Technology
- Address Non-Revenue Water
- Dam construction
- Improve the billing system prepaid and post-paid (Systems Theory on Service Delivery)
- De-corrupt the endemic corrupt system
- Public consultation on the appropriate alternative adaption strategies (Complexity Theory)



Picture 3 Residents collecting water from burst pipes

Source: Adapted from (CHRA, 2015)



Picture 4 Communal borehole donated by UNICEF

Source: Adapted from (CHRA, 2015)

Moriarty et al., (2010); Kayaga (2008); AFDB (2011) maintain how public services should be accessible to all and how they should meet the needs of the public and the service provider because the public service is a system which depends on various inputs for its success. It is against this background that this study asserts that, the Harare City Council, should implement service differentiation policies in the designing of tariffs to strike a balance between the high-income and low-income earners. Extensive literature espoused how Hungary, South Africa, Botswana, and Colombia also implemented the service differentiation policy by implementing tariffs which were specifically targeted at different quintiles of residents (GOB, 2012; Xie,

2006). Additionally, the government of Colombia adopted the service differentiation policy by taxing high-income residential areas more than low-income residential areas to ensure that every household has an acceptable amount of potable water access (England and Wales High Court, 1998; OFWAT, 1999).

Upon prepaid water meter implementation, the government of South Africa implemented a free basic policy to particular rations, to ensure that the previously disadvantaged population would access potable water supply based on a means-test approach of the domestic households (Xali, 2002; Ruiters, 2011). Likewise, Harare City Council can also implement a free basic water policy through a means-test approach which essentially targets geriatrics, orphans, and vulnerable children, physically challenged and the low-income households as deemed necessary. The JMP (2017); Majuru et al., (2011) accentuate that, the human rights-based approach to water argues prepaid water metering to be a privatization strategy which ushered in the disorientation of the right to water due to the over-emphasis of cost-recovery and profit making in water services. The Harare City Council can also adopt advance credit payment to enable residents to borrow a certain amount of units to recharge their accounts when they exhaust credit and repay it with a certain interest. The same technology has been adopted by mobile network service providers and it has been perfectly working, such that it would assist with mitigating the adverse effects of lack of access to potable water.

The Harare Residents Trust indicated that:

“The residents are against PPWM’s for example with the electricity prepaid meters when they run out of credit they can use other alternatives, but with water, it does not have any alternatives. I can use gas or wood when I do not have electricity, but the City Council cannot compare water with electricity the latter is a luxury and upon water shortages there could be a series of water-borne diseases overflow. They should know that water does not have a substitute, that’s why we have never heard of where they were actually successful, how then will these meters be successful in this collapsing country of ours?”

The CHRA said that:

“Harare has an average of 17 000 boreholes donated by various external sources and the Harare City Council is failing to service and maintain them. However, restructuring of pipes should be mandatory if the leakages are to be addressed because 55% of the potable water is lost through Non-Revenue Water. We also need to improve the prepaid and post-paid billing system, because estimates are not accurate.

A Harare Residents Trust Official asserts that water is the source of life and it has no alternative in the event that a household runs out of credit with no money to purchase more credit. Thus, this study gathers that residents are arguing that PPWM's will directly open a pathway for waterborne diseases when the residents exhaust credit and do not have access to water supply (OXFAM, 2011; WB, 2015; GOB, 2012). The residents are arguing that they have not yet heard a country in which PPWM's were absolutely successful, thus what guarantee does the City Council have in ensuring the effectiveness of these meters in a crumbling economy, that has been cataloged as a “Failed State” (Nhema & Zinyama, 2016).

Through the focus group discussions, the study revealed that drilling of boreholes is not sufficient as an alternative strategy for potable water provision because the primary objective should be fixing the leaking pipes which are accountable for NRW. The study further revealed that the billing system should be improved, because the post-paid water meters were ridden with lack of transparency due to estimated bills, which were not necessarily based on the actual bills as argued by (Jenny & Nilson, 2012). The study established that Harare City Council should make it an objective to consult the public on the most suitable alternative strategies that best suit them since they are most affected by the implementation of any service provision tool (International Water Association, 2004; Murungweni, 2013; JMP, 2017).

The results from the study indicated that residential areas in Harare, have an average of 17 000 boreholes, most of which have been drilled and donated to the public by NGO's and the city council does not even service or attempt to maintain them. Reasons cited for the failure of the city council to service and maintain the

boreholes was because the boreholes were depriving the city council of revenue since they are free (CHRA, 2015; Chirenda et al., 2015; Mtisi & Nicol, 2003). Hence, malfunctioning of the boreholes meant the residents would be involuntarily coerced to pay the city council for potable water provision. Hence the study established that another alternative strategy should be servicing and maintaining these communal boreholes, such that even low-income households have a fall-back when they do not have funds to pay for water. The residents association also echoed the same sentiments as other civil water organization officials, advocating for public participation in policymaking. Hence their argument was that they should consult the public for the appropriate alternative adaption in lieu of the prepaid water meter implementation for potable water provision.

ZESA holdings implemented prepaid electricity meters to enforce amenability of payment for services in warranting economically rational citizens who would conserve public resources being mindful of the financial implications attached to the resource (Zinyama & Tinarwo, 2015). However, placing electricity and water on the same scale is illogical, which explains why studies reveal that prepaid electricity meters have registered success stories than prepaid water meters. Arguably, prepaid electricity metering is often commonly accepted as opposed to prepaid water metering which critics argue to be contentious and divisive because of the inalienable human right to water against electricity which is a more of a choice (Musingafi & Chadamoyo, 2013; Bakker, 2007; Savenjie & Van de Zaag, 2008). Residents have a variety of alternatives to select from in the case of disconnection from electricity and some of these include the use of paraffin, candles, solar, charcoal, firewood, solar and gas.

However, the same does not apply with water whose alternative is very limited, which is why this study argues that the Harare City Council should adopt alternatives which are sustainable for the residents to warrant continuous supply to potable water. Prepaid water meter advocates argue that implementing alternative sources of potable water will dissolve the essence of payment for service because the public has a dependency syndrome which will be worsened by the free alternatives of water supply (Chatiza, 2016; Bond, 2008). As a result, this study argues that, with regards to the crumbling socio-economic status of Zimbabwe, the human right to potable

water can be addressed through other low-cost and affordable alternatives such as safe and protected wells and boreholes (Heymans, Eales & Franceys, 2014; JMP, 2017; WHO, 2010).

The Harare City Council stated that:

“We are still to point out sustainable alternatives particularly if one considers the social equity issues regarding access to potable water. If prepaid metering is seen as a revenue collection guarantor or demand management tool then strategies like subsidized provision based on a blended tariff could be put in force. It is also possible to do means-testing to ensure income-based targeting of prepaid metering leaving low-income households to access water.

The Harare City Council also said that:

“Service delivery comes primarily and the central government should be concerned with poverty alleviation. Prepaid water metering is meant to improve service delivery. The project has some economic impact on the residents but the post-paid system has also had its fair of glitches for us because residents pay when they feel like”

The study gathered that the Harare City Council is yet to devise distinct alternative strategies for the residents, but then it was not their primary objective as a potable water service provider. Resultantly, revenue collection remains the mandate of the city council since the prepaid water meter is supposedly meant to promote and demand payment from residents who do not pay for services (Dugard, 2010; Abu-Hilou & Jarrar, 2012). The city council reflected on proposing a subsidized tariff, through the implementation of a means-test as the most sustainable alternative, since free service provision will also have financial constraints for the service provider. Responses from the key informant interviews that were undertaken with the selected Harare City Council officials indicated that prepaid water metering is at the core of their policy objectives for potable water service provision.

Hence, they were not backing down with the implementation since post-paid meters had their tenure which had adverse effects on the city council's revenue because residents were ignorant in making bills and payments devoid. However, the City

council was also clear to indicate that prepaid water meters had some shortcomings in its pilot stages in affecting the poor due to the current economic status of Zimbabwe, which is inadvertently affecting everyone. Thus the Harare city council argues that any economic effects deriving from the implementation of prepaid water meters should be a mandate of the central government and the respective offices in charge of poverty alleviation, social welfare, and human development.



Picture 5 Water Merchants

Source: Own illustration (2017)

The above images taken by the researcher during the data collection stage are a clear reflection of the plight currently bedeviling the Harare residents, who have resorted to alternative potable water provision sources, which are however not sustainable. The top image reveals containers of drinking water being sold by unregulated water merchants who deliver on a door to door service. The bottom image reveals a baby-pram that has been resorted to collecting potable water from the nearest borehole for resale. While, Chapter 4, Section 77a of the Constitution of Zimbabwe (2013) asserts that water is central to human life and dignity; section 77b notes that every individual has the “right to safe, clean and potable water”. The

present potable water situation in Zimbabwe is in deferment of the Constitution and the prepaid water meter implementation without alternative strategies will further exacerbate the situation for the low-income households.

Prepaid water meter contenders argue that the HRBA is more prominent in developing and underdeveloped nations because the population within these quintiles has more focus on ensuring service provision and access rather than the financial sustainability of the service provider (Barlow & Clarke, 2002; Grant & Bimha, 1984). Accordingly, the SDG's of the post-development agenda clearly outline and reflect on the provision and equitable access of potable water supply to all by 2030 (WB, 2015; OXFAM, 2011; JMP, 2017). Likewise, this study argues that the implementation of prepaid water meters in the absence of sustainable alternative sources of potable water supply in Harare will be a drawback to achieving the targets and goals of the SDG's by 2030.

5.8 CONCLUSION

This study confirms that developing nations are motivated to adopt policies that are seemingly profitable in enabling overnight fixes to various causal factors which underpin the public sector. Empirical evidence clearly indicates that this leads to detrimental effects, most of which affect low-income households. Hence, the study established that the prepaid water metering policy is very commendable; however, its efficacy in implementation is still elusive because prepaid water meters are certainly not just a miracle panacea for the revenue challenges of urban water service providers. Similarly, prepaid water meters certainly have the potential to deliver significant benefits but they are not necessarily cost-effective for both the provider and low-income households in the Harare City Council. In conclusion, it is imperative to admit that, not much research exists on prepaid water meters in Zimbabwe. Therefore, this study lays a platform for future research by revealing that residents are not necessarily resisting prepaid water meters but they argue that the City council should adopt alternative measures bearing in mind the cost of potable water.

Henceforth, this study concludes that prepaid water metering certainly has emergent benefits for the Harare city council, such as the reduction of high non-revenue water,

improved revenue generation, and improved water billing through the timely generation of bills. However, amidst all these potential merits there is an excess of issues underpinning these potential benefits that primarily have to be addressed by the Harare city council authorities. Hence the critical need to co-implement alternative and sustainable strategies of water provision since access to potable water is a constitutional right in Zimbabwe. The Harare city council has to implement prepaid water meters against other alternative and sustainable strategies, particularly for low-income earners to ensure that the human right to water is not negated. There are more inquiry, dialogue and systematic work that still needs to be done to enable the Harare City Council and the Harare residents to make well-informed decisions on prepaid water meters for potable water provision. It is a tough situation for the residents to consistently prepay for potable water with irregular or unfixed means of income. Hence the implementation of a monthly free water tariff allocation for low-income residents would be fundamental for those who cannot afford to prepay. From a human rights and systems theory perspective within all the complexities, the Harare City Council should consistently acknowledge public service users as active citizens who are empowered to actively participate in decision making and policy making processes for their own good.

Therefore, given this background, it is significant for the Harare City Council to acknowledge the central role that multi-stakeholder engagement plays in the formulation and implementation of public policies. The study further concludes that prepaid water metering is contentious while prepaid electricity meters are more widely accepted simply because access to electricity in most developing nations is not a basic human right as opposed to water which is core to humanity. Concurrently, electricity has alternative strategies such as candles, paraffin, firewood, charcoal, gas and solar and for households that run out of electricity, which is unfortunately not applicable with water, which has no other sustainable alternatives. Hence the study advocates the Harare City Council to adopt alternative and sustainable strategies for the low-income households who might exhaust credit without the ability to prepay. It is seeming that, the socio-economic situation in Zimbabwe badly affects the low-income residents' affordability of potable water since the greater populace is self-employed and those who are employed are either getting insignificant salaries or not even receiving any salary.

In reference, this study cites that with prepaid water implementation, the Harare City Council should ensure the sustainability of humankind through adopting alternative sources of potable water provision. In essence, even water storage tanks can be strategically installed within the low-income high-density residential areas to reduce the time and distance spent by girl children and women in accessing potable water from unreliable sources. Harnessing subsidy implementation will also enable the Harare City Council to structure flexible payment terms and acceptable tariffs particularly for the low-income residents to ensure access potable water supply for all. Alternatively, the Harare city council may devise a means test and afford certain volumes of water for free on a monthly basis to the households that qualify and if they need more potable water out of the subsidy ration, they will ultimately have to pay. Various governments have diverse methods of subsidizing public services for the poor and Chile, for instance, funds its subsidies through tax payments. Thus the eligibility of the means test can be employed by taking into account the dynamics of economic factors like income, household size, occupation and living conditions. The study also confirms that service differentiation will encourage the adoption of tailor-made public service provision for each quintile of residents in the Harare City Council. In essence, service differentiation is also argued to be a “realistic alternative” because it bridges the gap between those who have the ability to access service and those who do not have because services will be suited for the needs of each thereby diversifying public service. Service differentiation is relatively ideal under appropriate conditions because low-level service provision will be aligned to low-costs while high-level service provision will be aligned to high-costs to be charged on the users.

Ultimately, the study concludes that drilling and regular servicing of communal boreholes should be intensively expanded in high-density suburbs to specifically cater for low-income households when they exhaust their credit. These measures all require inclusive and consultative efforts that facilitate multi-stakeholder engagements in the policy implementation of a sustainable potable water provision tool. The study also approves that the Harare City Council should plug NRW which accounts for significant potable water loss which is financially estimated at US\$0.9 million per month due to dilapidated infrastructure, water theft and illegal metering. In addition, the national government should craft a distinctive policy which takes into

perspective prepayment of potable water services in Zimbabwe in alignment with the constitutional rights of citizens for sustainable potable water provision. This is necessary for guiding the Harare city council on the constitutional frameworks surrounding potable water commoditization as derived from prepaid water implementation for potable water provision. In light of all these conclusions, the Harare city council should achieve adequate citizenry backing by taking into perspective citizenry consultative forums and public participation, in the selection of the appropriate potable water provision tool. This chapter sets the tone for the final synthesis of the entire study in the next chapter, given the recommendations of this chapter on the selection of alternatives to potable water in light of the HRBA and the systems theory to service delivery in a complex socio-economic environment.

CHAPTER SIX

A SYNTHESIS OF KEY FINDINGS, POLICY IMPLICATIONS, AND CONCLUSIONS

6.0 INTRODUCTION

Given the discussions from the previous chapters, the aim of this chapter was to provide an ultimate synthesis by merging the key findings from all the empirical chapters. This synthesis then set the tone for making solid conclusions which were established from those key findings and ultimately proffer tangible recommendations were proffered through the proposal of a framework for potable water provision for the Harare City Council. The study draws a synthesis of the key findings from the research questions which are connected to the main problem statement of the study which argues on the Harare City Council's technical capacity to sustain complex prepaid water meters if it is failing to sustain a cheaper post-paid water meter without negating the human right to water. From a Public Administration perspective, this study ultimately highlights how the research contributed to new knowledge on prepaid water meters and potable water provision for Zimbabwe and other developing nations. Consequently, the study draws from a blend of primary data and well-organized literature to address the research questions below:

- What is the fundamental link between HRBA and systems theory to service delivery in the implementation of prepaid water meters?
- What are the perceptions of the Harare residents regarding the effectiveness of the prepaid water meters for service provision?
- What is the technical capacity of the Harare municipal authorities to provide potable water to the residents through prepaid water meters?
- What changes do prepaid water meters present for the residents and the Harare City Council in the context of the legislative frameworks of water service provision in Zimbabwe?
- What are the appropriate alternative strategies for potable water provision in Zimbabwe?

The hypotheses that guided this study are highlighted below:

- There is a link that exists between the HRBA and Systems theory to service delivery in the implementation of prepaid water meters as a complex variable.
- Residents have negative perceptions towards the effectiveness of prepaid water meters for potable water service provision.
- Harare City Council does not have the technical capacity to effectively administer the prepaid water meters without nullifying the human right to water.

6.1 SUMMARY AND CONCLUSIONS OF THE CHAPTERS OF THE STUDY

The aim of this study was to comprehend the efficacy of prepaid water meters for potable water meters in light of the technical capacity of the Harare City Council without negating the human right to water. As a result, the study highlighted that prepaid water meters can only cultivate efficacy if the Harare city council adopts comprehensive and consultative of all the relevant stakeholders. The study highlighted on experiences of other developed and developing nations that have also implemented prepaid water meters whose experiences indicate that the efficacy of prepaid water meters in Zimbabwe is still indefinable. Furthermore, from a human rights-based approach the inalienable right to water should continuously be underscored to ensure uninterrupted access to potable water supply for low-income households through the adoption of alternative sources. Likewise, the study recommends the adoption/implementation of ideal potable water provision tools for all. Additionally, the systems theory to service delivery asserts how striking a balancing between financial sustainability and the social requirements of the service provider is essential in ensuring potable water provision for all. The complexity theory conclusively incorporates the dynamics surrounding the roles and responsibilities of the service provider and the service user within a complex service provision system.

6.1.1 Understanding the link between the theoretical frameworks for potable water provision in Harare

One of the objectives of this study was to succeed in advancing the actuality of the collective understanding between the fundamentals of human rights to water in terms of the service provision cycle as a continuous system, within the complexities of potable water provision. The study established that while most theories of access to potable water supply remain comparatively understudied, this study acknowledges that lack of access to potable water has adverse effects impacts on humankind due to water shortages. Additionally, this study provides evidence that suggests that access to the potable water supply can be theoretically grounded from a multi-dimensional proposition in comprehending the efficacy of prepaid water meters in Harare. This study also emphasizes the interrelationship or nexus between service provision and human rights to water which should be highlighted to ensure the satisfaction of both the service users and service providers in a complex environment. Based on these key findings the study proffered the recommendations outlined below.

6.1.1.1 Recommendations

The human rights-based approach is a significant theoretical framework that also grounds the achievement of human rights and development towards potable water through effective development cooperation. Furthermore, prepaid water meter implementation is more than just a policy stratagem but the ultimate summation and appreciation of the relationship between all the individual components involved in this system. Hence, the accomplishment of organizational goals by the Harare City Council as a system is mainly dependent upon the continuous feedback and cohesion between the Harare City Council and the residents. Resultantly, the complexity theory offers a scrutiny into the transformation of the well-established generic view of the citizens as the recipients and the service provider as the dominant participant in the public service ecosystem. As a result, the efficacy of prepaid water meters has to be comprehended through multi-pronged lenses in ensuring access to the potable water supply through an appropriate water provision tool.

6.1.2 Understanding the significance of citizen's perceptions of the effectiveness of prepaid water meters

One of the objectives of the study was to identify the perceptions of the Harare residents with regards to the effectiveness of prepaid water meters for potable water provision. The study identified that residents have negative perceptions towards the prepaid water meters citing them to be punitive and restrictive tools, which confirms the hypothesis of the study. The empirical findings revealed that most residential areas in Harare do not have access to piped potable water supply due to the failure of the Harare City Council as a result; the residents argue that there is no guarantee that the Harare City Council will be able to efficiently sustain the prepaid water meters. The study also revealed how residents perceive prepaid water meters to be costly bearing in mind the socio-economic status of Zimbabwe. Hence, this study notes that the effectiveness of prepaid water meters is highly dependent upon a lot of factors which cannot be easily cultivated by the Harare City Council given the socio-economic status of the country.

The Harare City Council also argues that post-paid water meters had the down-side of fostering a culture of non-payment because there is no sense of responsibility in ensuring payment for services and the Harare City Council argues that this has plunged them into huge debts. The study also established that prepaid water meters have both merits and demerits which can be fully cultivated by comprehending every complexity. In this regard, this study explicitly declares that potable water services do not necessarily have to be delivered for free, but then, certain tariff arrangements can be facilitated based on residential areas or means test approach for each household to ensure sustainability for both the service provider and the residents. Based on these key findings the study proffered the recommendations outlined below.

6.1.2.1 Recommendations

The study recommends that since there are varying perceptions from the residents with regards to prepaid water meter implementation, there should be "service differentiation". Furthermore, prepaid water meter implementation in the absence of the public participation is irrational because the efficacy of prepaid water meters is also dependent upon how the residents perceive them among other things. Hence,

the Harare City Council should take into cognizance the socio-economic crisis in which the nation is yielding to, in comprehending the efficacy of prepaid water meters. This is given the fact that, the effectiveness of this tool will only be efficacious with due reflection on all-encompassing stakeholder engagement and pro-poor approaches.

6.1.3 Prepaid water meter implementation and technical capacity of the service provider

The study approved that the core of public service provision should be derived from the manifestation of citizenry oriented service provision tools. This because, they factor in both the dynamics of the public as users and payers of services, whilst being cognizant of the capacity of the service provider to undertake their obligations. This approval was derived from one of the research objectives of this study, which was to investigate the technical capacity of the Harare City Council to deliver potable water through the prepaid water meters in the context of the appropriate legislative frameworks. In comprehending the efficacy of prepaid water meters, this study argues that the Harare City Council lacks the technical capacity to administer the meters. Factors like low potable water quality, dilapidating infrastructure, failure to generate revenue, inept administration and the socio-economic status of Zimbabwe amongst other issues deemed the technical capacity of the Harare City Council derisory. This study, therefore, underscores how urban potable water provision, pre and post prepaid water implementation has worsened the potable water challenges due to the technical incapacity of the Harare City Council for potable water provision. This actually confirms the hypothesis underpinning this research, that Harare City Council lacks the technical capacity to administer prepaid water meters for potable water provision. This essentially summarizes the lack of technical capacity by the Harare City Council, which is a major factor in comprehending the efficacy of prepaid water meters for potable water provision in Harare. This study also established that the Harare residents have no confidence in the technical capacity of the City Council because the water quality is not potable due to dilapidated infrastructural systems. Based on these key findings the study proffered the recommendations outlined below.

6.1.3.1 Recommendations

The Harare City Council should enable capacity investment into the potable water service provision structure. Harare City Council should also facilitate resource efficiency even within the varying dynamics of economic stresses and pressures. Conversely what is generally clear is that without a resuscitation strategy, Harare will continuously endure the risk and adverse effects of more waterborne diseases related illnesses and deaths which impact on the human livelihoods. It is also imperative to recommend on the most appropriate means of potable water service provision which best suits the Zimbabwean context based on lessons of what has worked in other developing nations. This study recommends for facilitating the dynamics that underlie “service differentiation” in ensuring residents have core access to potable water supply by delivering services based on what best suits each community. Additionally, the state should also enable the promulgation of a legislative framework that is essentially targeted on the progressive realization of the human right to potable water, in lieu of prepaid water implementation. Moreover, it is mandatory for the service provider to consult the populace when implementing a public policy since public service can only be effective if there is a solid social contract between the ratepayers and the local authority. This study also acknowledges that service provision consists of a “two-way traffic” zone whose critical drivers are the public and the service provider in light of the resident's associations. Additionally, resident associations should also raise awareness in informing the residents to fulfill their mandate as a ratepayer to ensure the sustainability of the financial aspect of service delivery.

6.1.4 Understanding the significance of adopting alternative sources of potable water provision

The study comprehended that the post-2015 development agenda goals explicitly articulate on the targets that give emphasis to how potable water should be available and accessible to all by 2030, but no clarity is made on how potable water should be provided. Hence, this study acknowledges that the adoption of effective, economic and efficient sources of potable water supply is central in realizing the significance of access to potable water supply for all. The dynamics surrounding prepaid water meter implementation and in particular the adoption of alternative sources and comprehending the quality of these sources in developing nations have not been adequately documented in previous studies. Most developing countries have adopted prepaid water metering and have since been plagued with the challenge to effectively maintain them, whilst some have managed to sufficiently deliver results as outlined below:

- Koboko, Uganda experienced challenges with the prepaid water meters because the public service miscalculated the essence of sustainably retaining an effective prepayment system in terms of required maintenance and support systems.
- Mumbai, India also rejected prepaid water implementation with activists and engineers citing the unsuitability of the city's technical capacity to efficiently sustain prepaid water meters.
- Al-Jaroshiya, Palestine also had negative implications for prepaid water implementation because the human right to water was negated in the process for the low-income earners because there were no alternative strategies to fall back on.
- Lusaka, Zambia also faced resistance from the residents who argued on the negation of the human right to water upon prepaid water implementation for those who could not afford to make an advance payment for potable water supply.
- Mzuzu, Malawi experienced both merits and demerits of prepaid water meters upon installation because there was a decrease in potable water consumption while some residents still argued over the element of prepayment.

- Windhoek, Namibia experienced the limitations of susceptibility to malfunctioning to which prepaid water meters are predisposed. Namibia also revealed how prepaid water meters can be powered by both batteries and electricity. In the case of the former, they are imported, while power outages also affect the potable water supply system.
- Tlokweng, Botswana ultimately implemented prepaid water meters on a larger scale in urban households despite the system succumbing to constant system failure thereby inhibiting residents from accessing potable water supply during the pilot stages of the project.
- Birmingham and Liverpool, United Kingdom ultimately invalidated prepaid water meter implementation on domestic households due to the detrimental effects it had on low-income households.
- Johannesburg, South Africa received backlash from the low-income settlers in Orange Farm who argued that the meters were disavowing their constitutional right to potable water and perpetrating the prevailing potable water adversities.

As a result, the prepaid water meter experiences and lessons drawn from the nine countries clearly highlight on the different dynamics from which the success of prepaid water meters is dependent upon in-order for the Harare City Council to cultivate the efficacy of prepaid water meters. The comparative study of the nine developing and developed nations as enabled by a secondary study certainly provides remarkable indicators which point towards the technical capacity or its lack thereof within the Harare City Council in mitigating the failure to ensure access to potable water supply, pending prepaid water implementation. The study gathered that the Harare City Council is yet to devise distinct alternative strategies for the residents because they argue that it is the mandate of the department of social development and welfare. Likewise, this study argues that the implementation of prepaid water meters in the absence of sustainable alternative sources of potable water supply in Harare will be a drawback to achieving the targets and goals of the SDG's by 2030.

6.1.4.1 Recommendations

Hence this study argues that the implementation of prepaid water meters should not solely be grounded in cost-recovery because the Harare City Council would simply be placing its hopes on the financial aspect while being oblivious of the economic demise, which would render a greater percent of the population unable to prepay (Thompson and de Wet, 2013; GOB,2012). This study also argues that prepaid water meters are not cost-effective in the Zimbabwean context and to further argue that even developed economies such as that of the United Kingdom even banned prepaid water implementation in the domestic household due to their economic implications (OFWAT, 1999; English and Wales High Court, 1998). Therefore it is significant for the Harare City Council to acknowledge the central role that multi-stakeholder engagement plays in the formulation and implementation of public policies. Given the impact of economic implications, the public service provider has to cushion the needs of the public, particularly the low-income households in light of the current socio-economic status and the possible alternatives which this study recommends for the Harare City Council to adopt/implement:

- ✓ Maintain and drill more communal boreholes
- ✓ Employ a means test (Needs-Based Approach)
- ✓ Implement free basic water policy (Human Rights-Based Approach)
- ✓ Caution residents on potable water conservation
- ✓ Enable advance Credit
- ✓ Drill communal boreholes
- ✓ Rainwater harvesting during rainy seasons
- ✓ Address Non-Revenue Water
- ✓ Grey-water Technology
- ✓ Conserve wetlands
- ✓ Dam construction
- ✓ Improve the billing system prepaid and post-paid (Systems Theory on Service Delivery)
- ✓ De-corrupt the endemic corrupt system
- ✓ Public consultation on the appropriate alternative adaption strategies (Complexity Theory)

6.2 SIGNIFICANCE OF FINDINGS FOR PUBLIC ADMINISTRATION

The central argument of this thesis is that the implementation of prepaid water meters for potable water provision is obscured within a complex variant of dynamics which hinder their efficacy to be essentially cultivated within Harare and other developing nations *inter alia*. Hence, in understanding the loci and foci of Public Administration, the central argument contributes to new insights to the understanding that prepaid water metering does not exist in a unitary form in terms of the obligations of stakeholder involvement. An important contribution of this thesis is the presentation of the concept of potable water provision, in terms of grasping prepaid water meter implementation through triangulated theories which reflect on the need to ensure access to potable water supply while being conscious of the roles and responsibilities of each stakeholder, within a complex system.

Thus, from a human rights and systems theory perspective within all the complex dynamics, the Harare City Council as an open system should consistently acknowledge public service users as active citizens who are empowered to actively participate in decision making and policy making processes for their own good. Ultimately, this research has sought to contribute to an improved understanding of the complexities that surround prepaid water implementation and how the effects on both service providers and service users can also be essentially curtailed. As a result, this study also delineated the development of a body of literature for Public Administration, in understanding prepaid water implementation from diverse theoretical loci to ensure access to potable water provision and organizational sustainability in Zimbabwe and other developing nations. It is essential to acknowledge that the field of Public Administration is hinged upon solid principles which are often referred to as the 5 E's of Public Administration as discussed below. These are outlined as efficiency, effectiveness, equity, equality, and economy.

6.2.1 Public Service Efficiency

Efficiency in the public service involves the utilization of the limited public resources and ensuring the cohesion of the output and input nexus for efficient service provision. Hence this study recommended that the Harare City Council should enable the adequate utilization of their limited resource within a socio-economic crisis in the implementation of prepaid water meters to enable potable water

provision for all. Despite the inhibitions of limited resources and the plight of revenue accrual, the Harare City Council should always strive to be citizen-oriented in ensuring efficiency in public service provision.

6.2.2 Public Service Effectiveness

The effectiveness of the public service involves unambiguous organizational objective and goal-setting and taking necessary action to ensure the realisation of the set goals and objectives for effective service provision. Likewise, from a complexity theoretical perspective, the key findings of the study affirm how more rigorous analysis; dialogue and technical work has to be undertaken to enable the Harare City Council and the Harare residents to make well-informed decisions on prepaid water meters for potable water provision.

6.2.3 Public Service Economics

The public service operates in an open system that succumbs to delivering to unlimited needs of the public within a limited pool of resources. It even becomes more critical, given the financial state of Zimbabwe as a failed state in light of its socio-economic crisis to highlight the need to ensure economic means in public administration. Hence, the principle of economy is defined as attaining resources at the lowest cost, while still attaining the set organizational goals and objectives by all means possible. Conversely, in one of the empirical chapters, the study recommends from a human rights perspective on the essentials of adopting/ implementing alternative strategies for potable water provision which are sustainable for the Harare residents upon disconnection from the potable water supply.

6.2.4 Public Service Equity

The infusion of equity as a pillar of public administration arose from the need to promote public service which was citizen-centered. Hence another empirical chapter of this study echoed the same sentiments in advocating for public participation and consultation because the citizens play a central role in ensuring the efficacy of prepaid water. Similarly, equity should be enabled because public service is a vacuum in the absence of all the relevant stakeholders, particularly the citizens. Thus, from a systems theory, the study recommends the Harare City Council as the

potable water service provider inter alia to be continuously connected to the public through acknowledging its roles and responsibilities.

6.2.5 Public Service Equality

Equality from a Public Administration perspective is the state of being equal, with all things being constant. This study, however, argues that a state of equality is not logical or rational given the Gini-coefficient which outlines the socio-economic gap between the poor and the rich. Other than that, the study gave an outline of the different responses from the low-income and high-income households from the household survey. Simultaneously, an empirical chapter within this research argued for a “service differentiation” policy to be adopted by the Harare City Council in comprehending the efficacy of prepaid water meters for potable water provision. Although, “service differentiation” is argued to harbor dependency syndrome from the low-income households from the subsidies and cheaper tariffs as opposed to the high-income household. This study affirms how it is essential to ground service provision within the Public Administration principles and ensuring equality through service differentiation is plausible. Equally, the Harare City Council should also incessantly caution the residents on their social roles and responsibilities in light of the social inequalities.

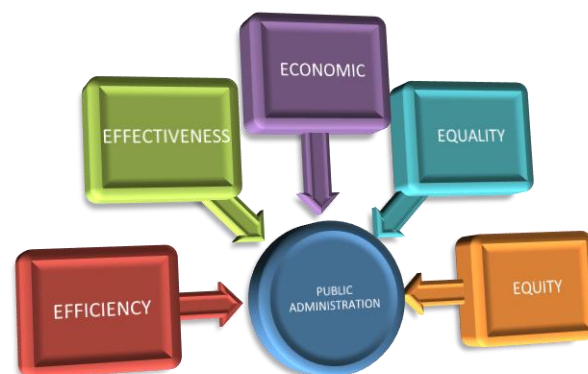


Figure 37 Pillars of Public Administration

Source: Own Illustration (2017)

6.3 SUGGESTIONS FOR FURTHER STUDY

In light of the summarised key findings, key contributions as well as the significance of the findings to Public Administration, the study proffered these recommendations for further study:

6.3.1 Adoption of alternative sources of potable water provision

The findings of this thesis also have imperative implications for both policymakers and practitioners and as a result, it confirms that access to potable water supply water supply should gain greater prominence in developing nations by adopting alternative water provision tools that are sustainable, economic, equitable and efficient. Additionally, not much research exists on prepaid water meters in Zimbabwe and this study lays a platform for future research in Public Administration by revealing that residents are not necessarily resisting prepaid water meters but they argue that the City council should adopt alternative measures bearing in mind the cost of potable water. Thus, there is more analysis; dialogue and technical work that still need to be done to enable the Harare City Council and the Harare residents to make well-informed decisions on prepaid water meters for effective, economic, efficient and equitable access to potable water.

6.3.2 Technicalities of prepaid water meters for potable water provision

The study gathered that residents are also not willing to pay for services, pre and post prepaid water meter implementation citing various reasons outlined in the study. Thus, further research also needs to be undertaken in realizing how financial sustainability for the service provider can be realized pending the crumbling socio-economic status of Zimbabwe, to ensure sustainable revenue accrual for service provision within the confines of Public Administration. Subsequently, more research can also be undertaken on realizing the actual technicalities surrounding the technicalities of prepaid water meters and their susceptibility to malfunction in cultivating their efficacy for effective, economic, efficient and equitable access to potable water.

6.3.3 Societal challenges of potable water provision

Thus, it becomes essential to dedicate further research in addressing the complexities that impede the successful implementation of prepaid water meters

from a technical perspective to ensure access to potable water supply. The empirical evidence from this study presented findings based on a household survey through a cross-sectional analysis that was undertaken on selected households that were systematically sampled. Thus, this study recommends that longitudinal studies can be undertaken to gain greater insight into the complexities from which prepaid water implementation for potable water provision exists in Zimbabwe. Ultimately, every gap acknowledged within the empirical study and literature study of this research should be able to incite recommendations for further study to be undertaken in addressing the societal problems surrounding potable water provision within the continuum of prepaid water implementation and potable water provision.

6.4 PROPOSED FRAMEWORK FOR POTABLE WATER PROVISION (PREPAID WATER IMPLEMENTATION)

Based on an ultimate synthesis of the findings in comprehending the efficacy of prepaid water meters for potable water provision in the Harare City Council, the study proffers a proposed framework for potable water provision in ensuring access to potable water supply for all as outlined by the steps below:

- i. Policy framework development
- ii. Institutional Framework Development
- iii. Demand and Supply Management
- iv. Selection of Service Users
- v. Ensuring Capacity Investment

6.4.1. Policy Framework Development

The study recommends the Harare City Council to mold a policy framework that incorporates all the relevant stakeholders by factoring in the (*Ex-Ante Facto and Ex-Post Facto*) phases to the public policy process in light of prepaid water meter implementation. This stage will highlight every stage of the policy-making process bearing in mind the significance of access to the potable water supply as hinged upon the 5 principles of Public Administration or the 5 E's of Public Administration.

6.4.2 Institutional Framework Development

An institutional framework will ensure that the policy framework is formulated and cultivated within the appropriate political environs. Furthermore, the institutional frameworks will also warrant the implementation of the principles of Public Administration for efficient, effective, economic, equal and equitable potable water service provision. Hence, the establishment of an institutional framework will enable the Harare City Council to underscore on the regulatory frameworks that aim to promote socio-economic development in light of prepaid water meter implementation for potable water provision.

6.4.3 Demand and Supply Management

An appropriate institutional framework will essentially guide the Harare City Council to craft suitable tariffs guidelines that best represent the demand and supply chain of the Harare residents. As a result, from a systems theory perspective, the pricing of potable water services needs to particularly mirror onto the needs of the residents while being cognizant of the cost-relatedness of water provision inter alia. At this stage, it also becomes essential to delineate the pricing between, the domestic and commercial entities as well as breaking it down to the low-income and high-income households, by bearing in mind the pricing differences for public and private sectors. This involves taking into perspective all the elements surrounding rationing and subsidizing potable water services, through varying concepts like “service differentiation” and adopting alternative sources, just to ensure a rational access to potable water supply.

6.4.4 Selection of Service Users

When the Harare City Council understands and manages its demand and supply chain, it becomes quite easy to select the service users based on the various set-tariffs, “service differentiation”, subsidies or allocated ration per quintile bearing in mind the financial capacity of each residential areas (low-income and high-income households) and commercial entities (public and private) alike. This stage requires comprehensive stakeholder engagement and transparency from both the service providers and service users. From a human rights-based approach, this stage is critical by taking into consideration the user’s financial ability which is a determinant of the efficacy of prepaid water meters in light of the socio-economic factors that

underlie them. Comprehensive stakeholder engagement will enable explicit organizational goal-setting and take necessary action to ensure the realisation of the set goals and objectives for effective service provision, based on the demand and supply management logistics.

6.4.5 Ensuring Capacity Investment

The complexity theory affirms how the efficacy of prepaid water meter implementation is embedded within an innumerable tract of dynamics amongst which the crucial ones are the financial and technical capacity of the service provider. As a result, the study recommends the Harare City Council to heavily invest in a cost-benefit analysis of its technical and financial capacity as a system that is operational within a complex environment which is underpinned by varying constraints. This stage is also directly tied to the first stage of policy framework development because capacity development also harnesses the (*Ex-Ante Facto and Ex-Post Facto*) phases in projecting and forecasting within the cost-benefit analysis to ensure the capacity to undertake any service provision process and procedure for potable water provision to all.

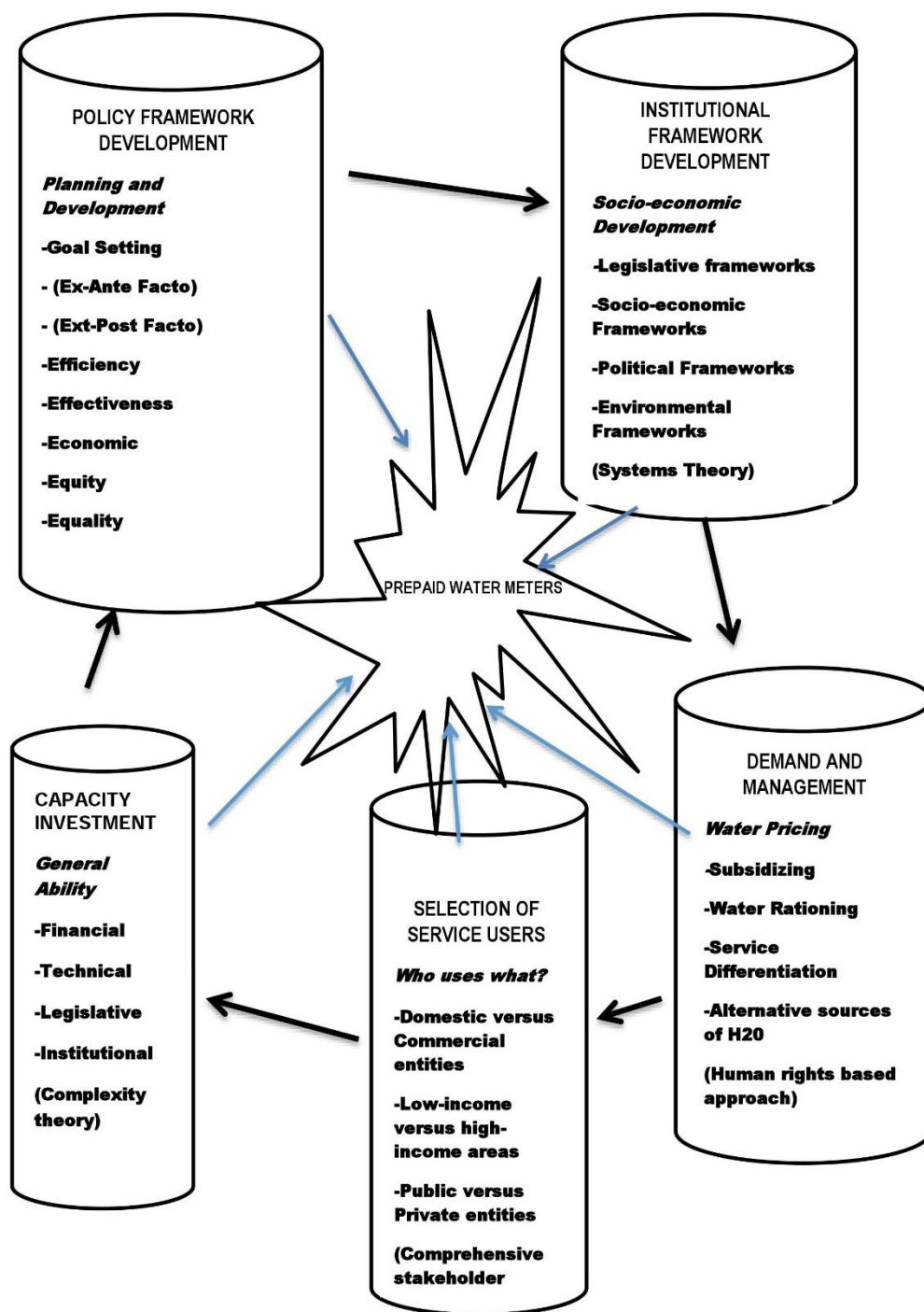


Figure 38 Proposed framework for prepaid water meter implementation

Source: Own Illustration (2017)

6.5 CONCLUSION

In conclusion, empirical review from this research clearly indicates that the efficacy of prepaid water metering for potable water provision is still obscured in the obscurities underpinning Zimbabwe. Furthermore, the study also explicitly concludes how prepaid water metering cannot be administered as the sole means of enabling revenue accrual and coercing non-payment in Zimbabwe because the adverse effects only trickle down on the residents. Conversely, ensuring access to potable water supply remains an obligation of the public service provider and ratepaying also remains an obligation of the service user. Henceforth, the Harare City Council should strike a definitive balance between its financial capacity and its social responsibility to the public, in ensuring access to potable water supply. In summation, the study confirms that the headlines surrounding prepaid water meter implementation are economic, policy-inclined, regulatory, stakeholder-oriented and technical capacity. Resultantly, the effective implementation of prepaid water meters will probably only be successful with due consideration to inclusive stakeholder engagement, satisfactory budgetary structures, sustainable pro-poor approaches and solid regulatory structures as proposed in the framework above. In summation, this chapter explored the policy implications interlinked to the efficacy of prepaid water meters for potable water provision, in the context of the three theoretical frameworks underpinning this study. This chapter, ultimately, recommended the adoption of a prepaid water meter framework for potable water provision, given the underlying policy implications inter alia.

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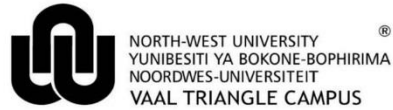
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8.0 APPENDICES

8.1 APPENDIX 1: PROPOSAL APPROVAL LETTER



PO Box 1174, Vanderbijlpark
South Africa 1900

Tel: 016 910-3111
Fax: 016 910-3116
Web: <http://www.nwu.ac.za>

Basic Sciences
Central Committee for Advance Degrees (C-CAD)
Tel: 0169103483
Email: charmaine.lekonyane@nwu.ac.za

22 August 2016

Ms TC Maramura (Review 17)

Student no: 28042387

Research title as approved by the CAD committee:

The efficacy of prepaid water meters for potable water service provision in the Harare municipality, Zimbabwe

Dear Ms Maramura

This letter serves to confirm that your PhD-research proposal has been approved by the Central Committee of Advanced Degrees in the School of Basic Sciences.

Committee members involved:

Present (Internal reviewers)	External reviewers (non-CAD reviewers)
Prof Johann WN Tempelhoff	Dr Melvin Diedericks
Prof Elize S van Eeden	

The ethics application is referred to the:

* Research Ethics Committee- BaSSREC: X.

* Research Ethics Committee-HHREC: _____.

You have received the details on the procedure that you will have to follow to submit to the Ethics Committee as indicated. For the CAD-records, please inform Mrs C Lekonyane (CAD-secretariat) when the ethical submission has been successfully completed and approved.

Yours sincerely



Prof Elize van Eeden
Chairperson: Committee of Advanced Degrees Basic Sciences

8.2 APPENDIX 2: REQUISITION LETTER TO UNDERTAKE STUDY

The Human Capital Director
Harare City Council,
Zimbabwe
112,

29 September 2016

Dear Sir/ Madam

**REF: APPLICATION FOR PERMISSION TO UNDERTAKE RESEARCH IN THE
HARARE MUNICIPALITY**

My name is Tafadzwa Clementine Maramura and I am a PhD candidate at the North-West University in South Africa. My research topic is titled: *The efficacy of prepaid water meters for potable water service provision in Harare municipality, Zimbabwe*. As part of my research study, I am required to submit a gatekeeper's letter from the parent institution which will allow me to undertake my study. I therefore request for permission to carry out the research study for academic purposes during the period of November 2016 to January 2017.

Yours Sincerely,
Ms. Maramura T.C
tmaramura@gmail.com

8.3 APPENDIX 3: REQUISITION LETTER TO UNDERTAKE STUDY



NORTH-WEST UNIVERSITY
YUNIBESITHI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

PO Box 1174, Vanderbijlpark
South Africa 1900

Tel: 002716 910-3111
Fax: 002716 910-3116
Web: <http://www.nwu.ac.za>

School Basic Sciences
Public Management and Administration
Tel: 0027169103455
Email: costa.hofisi@nwu.ac.za

30 August 2016

TO WHOM IT MAY CONCERN

Dear Sir/Madam

REQUEST FOR PERMISSION TO CONDUCT RESEARCH

This serves to confirm that Ms **Maramura Tafadzwa Clementine** is a registered student for the Degree of Doctor of Philosophy in Public Management and Governance at the Vaal Triangle Campus of the North-West University. As part of the requirements for this degree programme, the student is expected to conduct research which is solely meant for academic purposes only.

We humbly request you to allow the student to conduct the research in your institution and to interact with relevant selected office-bearers and officials. We have instructed the student to observe professionalism and ethical considerations by maintaining anonymity of all the participants concerned. The student has also been instructed to maintain strict confidentiality in her interactions with respondents. Once the research is complete, it can be availed to your institution upon request. We hope that the findings of the research will benefit your institution and all the relevant stakeholders.

Your support in this research undertaking is greatly appreciated. Should you need any further clarification please do not hesitate to contact me on the details given.

We are looking forward to your assistance.

Yours sincerely

A handwritten signature in black ink, appearing to read 'H. Hofisi'.

Costa Hofisi
Subject Chair

8.4 APPENDIX 4: GATEKEEPERS



CITY OF HARARE

HUMAN CAPITAL AND PUBLIC SAFETY DEPARTMENT
ROWAN MARTIN BUILDING, HARARE, ZIMBABWE
POST OFFICE BOX 1680
TELEPHONE 752979 / 753000

EMAIL: hrd@hararecity.co.zw
ADDRESS ALL CORRESPONDENCE TO THE HUMAN CAPITAL AND PUBLIC SAFETY DIRECTOR

30 September 2016

North-West University
P.O. Box 1900, Vanderbijlpark
South Africa

**REF: AUTHORITY TO UNDERTAKE A RESEARCH: MARAMUR TAFADZWA
CLEMENTINE**

This letter serves as authority for Maramura Tafadzwa Clementine to undertake a research survey on the topic: **"THE EFFICIENCY OF PRE-PAID WATER METERS FOR PORTABLE WATER SERVICES IN HARARE MUNICIPALITY."**

The research survey aims to identify and recommend mechanisms and arrangements that can be adopted to improve the delivery of water services in Harare.

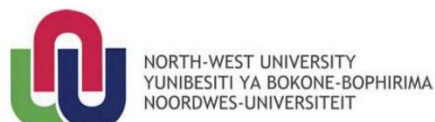
The City of Harare has no financial obligation and neither shall it render any further assistance in the conduct of the research. The researcher is however, requested to avail a soft and hard copy of the research to the under designed so that, the residents of Harare can benefit out of it. The research should not be used for any other purpose other than the study purpose specified.

Yours Faithfully

**HUMAN CAPITAL DIRECTOR
DR. C. CHINGOMBE**

DATE

8.5 APPENDIX 5: ETHICS APPROVAL



Private Bag X6001, Potchefstroom,
South Africa, 2520

Tel: (018) 299-4900

Faks: (018) 299-4910

Web: <http://www.nwu.ac.za>

Institutional Research Ethics Regulatory Committee

Tel: +27 18 299 4849

Email: Ethics@nwu.ac.za

ETHICS APPROVAL CERTIFICATE OF STUDY

Based on approval by the **Basic and Social Sciences Research Ethics Committee (BaSSREC)** at the meeting held on **06/10/2016**, the North-West University Institutional Research Ethics Regulatory Committee (NWU-IRERC) hereby **approves** your study as indicated below. This implies that the NWU-IRERC grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the study may be initiated, using the ethics number below.

Study title: The efficacy of prepaid water meters for potable water service provision in the Harare Municipality, Zimbabwe.																																													
Study Leader/Supervisor: Prof Costa Hofisi																																													
Student: Ms TC Maramura																																													
Ethics number:	<table border="1"><tr><td>N</td><td>W</td><td>U</td><td>-</td><td>HS</td><td>-</td><td>2</td><td>0</td><td>1</td><td>6</td><td>-</td><td>0</td><td>1</td><td>1</td><td>9</td></tr><tr><td colspan="4">Institution</td><td colspan="4">Study Number</td><td colspan="4">Year</td><td colspan="2">Status</td></tr><tr><td colspan="15">Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation</td></tr></table>	N	W	U	-	HS	-	2	0	1	6	-	0	1	1	9	Institution				Study Number				Year				Status		Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation														
N	W	U	-	HS	-	2	0	1	6	-	0	1	1	9																															
Institution				Study Number				Year				Status																																	
Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation																																													
Application Type: Original project																																													
Commencement date: 2016-10-10	Expiry date: 2019-10-10																																												
Risk:	Low																																												

Special conditions of the approval (if applicable):

- Translation of the informed consent document to the languages applicable to the study participants should be submitted to the BaSSREC (if applicable).
- Any research at governmental or private institutions, permission must still be obtained from relevant authorities and provided to the BaSSREC. Ethics approval is required BEFORE approval can be obtained from these authorities.

General conditions:

While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:

- The study leader (principle investigator) must report in the prescribed format to the NWU-IRERC via BaSSREC:
 - annually (or as otherwise requested) on the progress of the study, and upon completion of the project
 - without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
 - Annually a number of projects may be randomly selected for an external audit.
- The approval applies strictly to the proposal as stipulated in the application form. Would any changes to the proposal be deemed necessary during the course of the study, the study leader must apply for approval of these changes at the BaSSREC. Would there be deviation from the study proposal without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-IRERC via BaSSREC and new approval received before or on the expiry date.
- In the interest of ethical responsibility the NWU-IRERC and BaSSREC retains the right to:
 - request access to any information or data at any time during the course or after completion of the study;
 - to ask further questions, seek additional information, require further modification or monitor the conduct of your research or the informed consent process.
 - withdraw or postpone approval if:
 - any unethical principles or practices of the project are revealed or suspected,
 - it becomes apparent that any relevant information was withheld from the BaSSREC or that information has been false or misrepresented,
 - the required annual report and reporting of adverse events was not done timely and accurately,
 - new institutional rules, national legislation or international conventions deem it necessary.
- BaSSREC can be contacted for further information or any report templates via Charmaine.Lekonyane@nwu.ac.za or 018 210 3483.

The IRERC would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the IRERC or BaSSREC for any further enquiries or requests for assistance.

Yours sincerely

Prof LA
Du Plessis

Digitally signed by
Prof LA Du Plessis
Date: 2016.11.22
16:09:03 +02'00'

Prof Linda du Plessis

Chair NWU Institutional Research Ethics Regulatory Committee (IRERC)

8.6 APPENDIX 6: TITTLE REGISTRATION



Web: <http://www.nwu.ac.za>

Higher Degree Administration
Tel: 016 910 3033
Email: Jenna.Wilson@nwu.ac.za

03 October 2017

Dear Ms TC Maramura (28042387)

REGISTRATION OF TITLE

At the Faculty Board, Humanities meeting, your title was approved as follows:

The efficacy of prepaid water meters for potable water service provision in the Harare Municipality, Zimbabwe

The above-mentioned title may under **no circumstances** be changed without consulting your supervisor/promoter and obtaining the approval from the Faculty Board.

Your attention is drawn to the following publications / web addresses:

- A Rules:
http://www.nwu.ac.za/sites/www.nwu.ac.za/files/files/i-governance-management/policy/7P-Arules2015_e_1.pdf
- Manual for Postgraduate Studies:
<http://www.nwu.ac.za/sites/www.nwu.ac.za/files/files/i-research-support/Manuals/ICRI/2016-04-06%20ICRI%20Manual%20for%20M%20and%20D%20students.pdf>

We wish you a pleasant and successful period of study.

Yours sincerely

**Ms J Wilson
FOR REGISTRAR**

Original details: (22989064) C:\Users\22989064\Desktop\Labels and Templates\Title registration.docm
3 Oct 2017

File reference: 7.1.11.1

8.7 APPENDIX 7: INFORMATION LEAFLET AND CONSENT FORM

ANNEXURE 3: INFORMATION LEAFLET AND CONSENT FORM FOR RESEARCH PARTICIPANTS.



NORTH-WEST UNIVERSITY
YUNIBESITHI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

PO Box 1174, Vanderbijlpark
South Africa, 1900

TITLE OF THE RESEARCH PROJECT: The efficacy of prepaid water meters for potable water provision in the Harare City Council, Zimbabwe.

PRINCIPAL INVESTIGATOR: Tafadzwa Clementine Maramura

UNIVERSITY No: (28042387)

Address: 42 Hans Van Rensburg SE7 Vanderbijlpark Guateng 1900

CONTACT NUMBER: 0840429559; Email: tmaramura@gmail.com

You are invited to take part in a research study that forms part of my Ph.D. Degree in Public Management and Governance from November 2016 – January 2017. This form explains the purpose of the study, how you will be involved and your rights as a participant. Please know that your participation is entirely voluntary, you will not be forced to take part in the study but you are kindly being requested to help. The study has been approved by the Committee for Advanced Degrees (CAD) of the faculty of humanities of the North West University, Vaal Triangle Campus and the Harare City Council.

The study will be conducted within residential areas in the Harare City Council. Methods of study will be a questionnaire survey, focus-group discussions and in-depth interviews. The objectives of this study are:

- To establish the fundamental link between HRBA and systems theory to service delivery in the implementation of prepaid water meters.
- To identify the perceptions of the Harare residents regarding the effectiveness of prepaid water meters for service provision.
- To investigate the technical capacity of the Harare City Council authorities in providing potable water to the residents through prepaid water meters.

- To understand the changes that prepaid water meters present for the residents and the Harare City Council in the context of the legislative frameworks of water service provision in Zimbabwe.
- To explore and recommend the appropriate alternative strategies for potable water provision in Zimbabwe.

Participants: The following participants will be invited from the Harare City Council officials, Residential areas in Harare whose households have prepaid water meters and the Combined Harare Residents Association and Harare Residents Trust officials.

You have been invited to participate because:

You are EITHER a Harare City Council resident who has a prepaid water meter on their household OR

You are a Harare City Council official who deals directly with the prepaid water meter implementation OR

You are an official of the Combined Harare Residents Association or the Harare Residents Trust.

You would be excluded if:

- You do not have a prepaid water meter on your household
- You do not stay in the residential areas of Harare
- You are not a Harare City Council Official involved with the prepaid water meter implementation
- You are not an official within the frameworks of Harare Residents Trust or Combined Harare Residents Association

Your participation: As a Harare resident, you will be expected to complete a standardised questionnaire that will check your perceptions of the prepaid water meters with regards to the technical capacity of the Harare City Council. You will simply tick off the answer that's suitable for you from those given for each question and write your comments in spaces provided for the relevant questions in the questionnaire. You are kindly expected to complete this questionnaire once.

If you are a Harare City Council official or Harare Residents Trust and Combine Harare Residents Association official, you will be expected to participate in a key-informant interview or focus group discussion respectively in understanding the perceptions of the residents towards prepaid water meters and mapping the way towards potable water provision with regards to the technical capacity of the Harare City Council. You will also be kindly asked for copies of official documents in the form of Service Delivery Charters, Annual Budgets, Citizen Engagement Minutes and Prepaid water meter feasibility plan.

Benefits and Risks of the study: The study will not provide direct benefits to you. However, your contribution and the research findings may help to reveal strengths and weaknesses of the internet/online application method and your suggestions may further improve the efficiency of district as well as school administration front and back office staff, enhance public schools' admission processes and promote speedy and quality services to applicants/ citizens. There are no identifiable risks associated with your participation in this study. However, should you have any concern or discomfort associated with your participation, please feel free to make the researcher aware?

Compensation for participation: You will not be paid to take part in this study. The researcher or research assistants will come to you for the interview or to distribute questionnaires therefore no costs in travelling will be involved on your part.

Confidentiality: the interviews and focus group discussions will be tape-recorded. However, your names and any identifying information will not be used in any part of the research report. All your information and interview responses will be kept confidential and they will not be shared with anyone else besides the researcher's supervisor.

Research findings: A pdf electronic copy of the dissertation, the research report summary and abstract will be submitted to the Harare City Council, Harare Residents Trust and the Combined Harare Residents Association, where you can access them for your own viewing or it can be given to you by the researcher upon request.

Anything else you need to know? Please contact my supervisor, Prof. Costa Hofisi on this number 016 910 3455. You will receive a copy of this information and consent form for your own records.

Declaration by participant

By signing below, I agree to take part in a research study. I declare that;

I have read and understood this information and consent form and it is written in a language with which I am fluent and comfortable.

I have had a chance to ask questions to both the person obtaining consent, as well as the researcher (if this is a different person), and all my questions have been adequately answered.

I understand that taking part in this study is voluntary and I have not been pressurised to take part.

I understand that what I contribute (what I report/say/write could be reproduced publically and/or quoted, but without reference to my personal identity.

I may choose to leave the study at any time and will not be penalised or prejudiced in any way.

I may be asked to leave the study before it has finished, if the researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at On.....2016

Signature / Mark of participant.....

Signature of person obtaining consent

8.8 APPENDIX 8: QUESTIONNAIRE

QUESTIONNAIRE

Introduction: My name is Tafadzwa Clementine Maramura; I am a PhD candidate in the School of Public Management and Governance from the North-West University. I am conducting research on the *"Efficacy of prepaid water meters for potable water service provision in the Harare City Council, Zimbabwe"*. This questionnaire shall be used for academic purposes only and all responses will be treated with confidentiality. Completion of this questionnaire is completely voluntary and anonymity will be maintained. You may withdraw from this study without attracting any form of penalty. I therefore kindly ask you to honestly answer all questions and feel free to ask for assistance in responding to the questions. Your co-operation will be greatly appreciated.

I agree that the purpose of the study has been explained to me and that it is of my own consent to participate. ☐

SECTION A: DEMOGRAPHIC INFORMATION

1. Gender Female ☐ Male ☐

2. Age group (Tick the box below your age group)

16-20	☐	21-30	☐	31-40	☐	41-50	☐	51-60	☐	60+	☐
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3. Occupation (Tick the box below for your occupation)

Employed	☐	Unemployed	☐	Self employed	☐
----------	--------------------------	------------	--------------------------	---------------	--------------------------

4. Marital Status

Single	☐	Married	☐	Divorced	☐	Widowed	☐
--------	--------------------------	---------	--------------------------	----------	--------------------------	---------	--------------------------

5. Residential Area (Tick the box below for area of residence)

High Density ☐ Medium Density ☐ Low Density ☐ CBD ☐

5.1 Are you a tenant or owner of the premises on which you reside? (Tick where appropriate)

Landlord ☐ Tenant ☐

5.2 Household Size (Tick where appropriate)

Below 5 ☐ 6-9 ☐ 10 and above ☐

6. Amount of income (Tick where appropriate)

Less than \$200	☐	\$201- \$500	☐	\$501- \$1000	☐	Above \$1000	☐
-----------------	--------------------------	--------------	--------------------------	---------------	--------------------------	--------------	--------------------------

SECTION B: KNOWLEDGE ON POTABLE WATER USAGE

1. How do you rate the use of potable water in your home in terms of demand? *(Tick where appropriate)*

Potable water use categories by contribution to monthly demand	Very High	High	Low	Very Low	Other
Domestic use					
Vegetable gardening					
Landscaping					
Livestock Feeding					
Other Household Uses					

2. How efficient is your current potable water source by the type you use? *(Tick where appropriate)*

Current potable water source rating by significance	Very High	High	Low	Very Low	Other
Borehole					
Water merchants					
Backyard wells					
Harare City Council					
Donor support					
Other sources					

3. How much money do you spend on potable water on a monthly basis? *(Tick where appropriate)*

Amount of money spent on potable water	Tick
\$US0- \$US10	
\$US11 – \$US20	
\$US21 – \$US30	
Above \$US30	

4. How is the quality of the potable water you are currently using? *(Tick where appropriate)*

Current potable water source rating	Very High	High	Low	Very Low	Other
Borehole					
Water merchants					
Backyard wells					
Harare City Council					
Donor support					
Other sources					

5. What is the reason for the potable water supply challenges being faced by the Harare residents?

Reason for potable water supply challenges	Very High	High	Low	Very Low	Other
Harare city council corruption					
Poor management by the Harare City Council					
Poor revenue collection system					
Economic challenges					
Dilapidated Infrastructure					

SECTION C: WHAT ARE THE PERCEPTIONS OF THE HARARE RESIDENTS REGARDING THE EFFECTIVENESS OF THE PREPAID WATER METERS?

1. I am happy with the current postpaid water metering system *(Tick where appropriate)*

Strongly agree		Agree		Not Sure		Disagree		Strongly Disagree	
----------------	--	-------	--	----------	--	----------	--	-------------------	--

2. Prepaid water meters will be more effective than the postpaid water meters *(Tick where appropriate)*

Strongly agree		Agree		Not Sure		Disagree		Strongly Disagree	
----------------	--	-------	--	----------	--	----------	--	-------------------	--

3. Prepaid water meters will encourage residents to avoid wasting potable water *(Tick where appropriate)*

Strongly agree		Agree		Not Sure		Disagree		Strongly Disagree	
----------------	--	-------	--	----------	--	----------	--	-------------------	--

4. Prepaid water meters will promote payment for potable water provision *(Tick where appropriate)*

Strongly agree		Agree		Not Sure		Disagree		Strongly Disagree	
----------------	--	-------	--	----------	--	----------	--	-------------------	--

5. Prepaid water meters will affect the poor and their right to access potable water *(Tick where appropriate)*

Strongly agree		Agree		Not Sure		Disagree		Strongly Disagree	
----------------	--	-------	--	----------	--	----------	--	-------------------	--

SECTION D: WHAT IS THE TECHNICAL CAPACITY OF THE HARARE CITY COUNCIL TO PROVIDE POTABLE WATER TO THE RESIDENTS THROUGH THE PREPAID WATER METERS?

1. Harare City Council has the technical capacity to efficiently provide potable water through the prepaid water meters *(Tick where appropriate)*

Strongly agree		Agree		Not Sure		Disagree		Strongly Disagree	
----------------	--	-------	--	----------	--	----------	--	-------------------	--

2. Prepaid water meters can generate more revenue for the Harare City Council *(Tick where appropriate)*

Strongly agree		Agree		Not Sure		Disagree		Strongly Disagree	
----------------	--	-------	--	----------	--	----------	--	-------------------	--

3. Harare City Council can improve potable water supply if their revenue collection is improved by the prepaid water meters *(Tick where appropriate)*

Strongly agree		Agree		Not Sure		Disagree		Strongly Disagree	
----------------	--	-------	--	----------	--	----------	--	-------------------	--

4. Harare City Council can adopt other appropriate alternative strategies for potable water provision *(Tick where appropriate)*

Strongly agree		Agree		Not Sure		Disagree		Strongly Disagree	
----------------	--	-------	--	----------	--	----------	--	-------------------	--

THANK YOU FOR YOUR COOPERATION

8.9 APPENDIX 9: KEY INFORMANT INTERVIEWS

KEY- INFORMANT INTERVIEWS

Introduction: My name is Tafadzwa Clementine Maramura; I am a PhD candidate in the School of Public Management and Governance from the North-West University. I am conducting research on the *“Efficacy of prepaid water meters for potable water service provision in the Harare City Council, Zimbabwe*. This interview shall be used for academic purposes only and all responses will be treated with confidentiality. Participation in this interview is completely voluntary and anonymity will be maintained. You may withdraw from this study without attracting any form of penalty. I therefore kindly ask you to honestly answer all questions and feel free to ask for assistance in responding to the questions. Your co-operation will be greatly appreciated.

I agree that the purpose of the study has been explained to me and that it is of my own consent to participate. ☐

SECTION A: DEMOGRAPHIC INFORMATION

1. Gender *(Tick the box below your gender)*

Female	☐	Male	☐
--------	--------------------------	------	--------------------------

2. Age group *(Tick the box below your age group)*

25 and below	☐	25-30	☐	31-40	☐	41-50	☐	51-60	☐	60+	☐
--------------	--------------------------	-------	--------------------------	-------	--------------------------	-------	--------------------------	-------	--------------------------	-----	--------------------------

3. Management level *(Tick the box below your management level)*

Entry Level ☐ Medium Level ☐ Senior Management Level ☐

4. How long have you been working for the organization?

Number of years	Tick	Number of years	Tick
< 5	☐	6 – 10	☐
11 – 15	☐	> 16	☐

SECTION B: WHAT ARE THE PERCEPTIONS OF THE HARARE RESIDENTS REGARDING THE EFFECTIVENESS OF THE PREPAID WATER METERS?

1. What are the views of the residents with regards to the prepaid water meters?
2. Do you think prepaid water meters will be more effective than the postpaid water meters? Please explain.
3. Do you think prepaid water meters will encourage residents to save water? Explain
4. Can you explain how prepaid water meters will promote residents to pay for water?
5. Human rights activists argue that prepaid water meters will affect the poor and their human right to access potable water? (What is your position on the proposition?)

SECTION C: WHAT IS THE TECHNICAL CAPACITY OF THE HARARE CITY COUNCIL TO PROVIDE POTABLE WATER TO THE RESIDENTS THROUGH THE PREPAID WATER METERS?

1. What is the technical capacity of the Harare City Council to deliver potable water through prepaid water meters?
2. Will prepaid water meters be able to generate more revenue for the Harare City Council?
3. Do you think the Harare City Council will be able to improve potable water supply if their revenue collection is improved by the prepaid water meters? Please explain.
4. What measures do you have in place for the low-income households who might exhaust their credit without additional funds?

THANK YOU FOR YOUR COOPERATION

8.10 APPENDIX 10: FOCUS GROUP DISCUSSIONS

INDEPTH- INTERVIEWS

Introduction: My name is Tafadzwa Clementine Maramura; I am a PhD candidate in the School of Public Management and Governance from the North-West University. I am conducting research on the *“Efficacy of prepaid water meters for potable water service provision in the Harare City Council, Zimbabwe*. This interview shall be used for academic purposes only and all responses will be treated with confidentiality. Participation in this interview is completely voluntary and anonymity will be maintained. You may withdraw from this study without attracting any form of penalty. I therefore kindly ask you to honestly answer all questions and feel free to ask for assistance in responding to the questions. Your co-operation will be greatly appreciated.

I agree that the purpose of the study has been explained to me and that it is of my own consent to participate. ☐

SECTION A: What are the perceptions of the Harare residents regarding the effectiveness of the prepaid water meter?

1. Do you have any knowledge of how the prepaid water meters operate? Please elaborate.
2. What are the views of the residents regarding the effectiveness of the prepaid water meters?
3. Do you think prepaid water meters will encourage residents to save water? Explain
4. Can you explain how prepaid water meters will promote residents to pay for water?
5. Do you think the prepaid water meters will efficiently meet the potable water needs of the Harare residents? Please elaborate.
6. What do you know about the relationship between the human rights to potable water and the implementation of prepaid water meters? Please explain.

SECTION B: What is the technical capacity of the Harare City Council to provide potable water to the residents through the prepaid water meters?

1. Do you think the Harare City Council has the technical capacity to deliver potable water through prepaid water meters? Please elaborate.
2. What measures do you think should be put in place by the Harare City Council for the low-income households that might exhaust their credit without additional funds?
3. In your opinion, do you think the residents were fully incorporated into the prepaid water meter policy implementation process?
4. What other appropriate alternative strategies for potable water provision do you think can be adopted by the Harare City Council?

THANK YOU FOR YOUR COOPERATION

8.11 APPENDIX 11: LANGUAGE EDITING CONFIRMATION

B	S	BE STILL COMMUNICATIONS For effective communication solutions	bestillcommunications@gmail.com landamasuku@gmail.com +27835841854; +27618043021
C	C		

CERTIFICATE OF EDITING

This document certifies that the manuscript whose title appears below was edited for proper English language usage, grammar, punctuation, spelling, and overall style by Dr Nhlanhla Landa, whose academic qualifications appear in the footer of this document. The research content and the authors' intentions were not altered during the editing process

**MANUSCRIPT TITLE: THE EFFICACY OF PREPAID WATER METERS FOR POTABLE
WATER SERVICE PROVISION: HARARE CITY COUNCIL, ZIMBABWE**

AUTHOR: Ms. Maramura Tafadzwa.C.

DATE: 20 October
2017

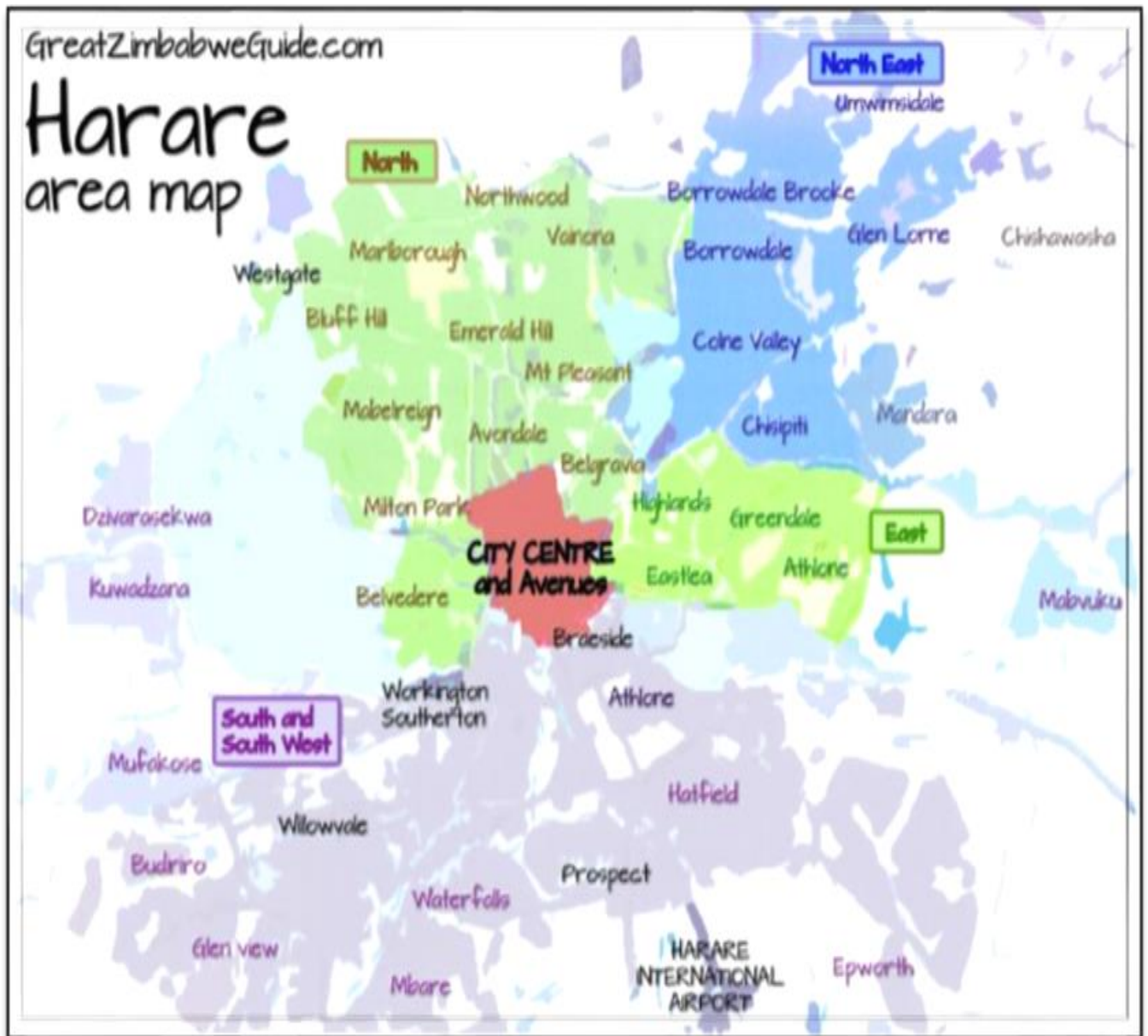
EDITOR'S COMMENT

The author was advised to effect suggested corrections with regards to clarity of terms and expression.


Signature

PhD Applied English Linguistics (UFH), MA Applied English Linguistics (MSU), BA (Honours) English and Communication (MSU)

8.12 APPENDIX 12: MAP OF HARARE



8.13 APPENDIX 13: MAP OF ZIMBABWE

