ORGANIZATIONAL FACTORS AFFECTING THE QUALITY OF OPERATION SERVICES IN SMALL TOWN WATER SUPPLY SYSTEMS IN CENTRAL UGANDA

BY

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DECLARATION

I, Felix Rutaro Baineki Twinomucunguzi, declare that this is my original work, and where other people's work was used, it was duly acknowledged. I further declare that this work has not been presented to any other Institution or University for any award.

Signed: ……

Date: ……...

APPROVAL

This dissertation, entitled *"organizational factors affecting the quality of operation services in small town water supply systems in central Uganda"*, has been submitted with our approval as supervisors.

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DEDICATION

This dissertation is dedicated to my dear wife, Daphne Mbabazi Twinomucunguzi and dear son, Ethan Mugwisagye Twinomucunguzi, for their moral support and understanding throughout the study times.

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LIST OF ACCRONYMS AND ABBREVIATIONS

DWD	Directorate of Water Development
FY	Financial Year
GoU	Government of Uganda
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
LOC	Levers of Control
MDGs	Millennium Development Goals
MWE	Ministry of Water and Environment
MWLE	Ministry of Water, Lands and Environment
NWSC	National Water and Sewerage Corporation
O&M	Operation and maintenance
RGC	Rural Growth Centre
UBOS	Uganda Bureau of Statistics
UMI	Uganda Management Institute
UN	United Nations
UNDP	United Nations Development Programme
WHO	World Health Organization
WSDF-C	Water and Sanitation Development Facility Central Branch
WSSB	Water Supply and Sanitation Board

ABSTRACT

This study assessed how organizational factors of resource availability, community participation and organizational control affect the quality of operation services in small town water supply systems in central Uganda. These organizational factors had hitherto received limited attention in the operation of small town water supply systems leading to poor performance of the systems. The study adopted a descriptive design through a cross sectional survey conducted in five small town water supply systems of Kibibi, Nkokonjeru, Semuto, Kakiri and Nakifuma. A total of 191 respondents, representing a response rate of 75.5%, participated in the study through questionnaires and interviews. From the study, it emerged that resource availability has a weak insignificant negative effect on the quality of operation services while community participation was noted to have a statistically significant positive effect on the quality of operation services. Organizational control was observed to positively impact on the quality of operation services, albeit to a low statistical significance. The study therefore concluded that organizational factors of resources availability and organizational control do not significantly affect the quality of operation services in small town water supply systems, while community participation significantly affects the quality of the operation services. The study thus recommends that the Ministry of Water and Environment and the Local Authorities need to motivate the water supply board members through facilitation and training in order to sustain their interest in management of the water supply systems. The Ministry should also support the small town water supply systems to improve on internal and external revenue collection while assisting in developing formal and informal control systems to improve utilization of resources for service improvement.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This study examined the organizational factors affecting the quality of operation services in small town water supply systems in central Uganda. The study focused on how resource availability, community participation and organizational control affect the quality of operation services in water supply systems in small towns of central Uganda. Operation services in small town water supply systems in Uganda have improved over time with the goal of meeting customer expectations in the service areas, but certain organizational aspects remain unresolved, hence hindering efficient service provision (MWE, 2009c). This chapter presents the background to the study, statement of the problem, general objective, specific objectives, research questions, hypotheses, Conceptual Framework, significance, justification, scope, and operational definitions of terms and concepts of the study.

1.1 Background to the Study

1.1.1. Historical Background

Poor operation of water supply infrastructure has remained a daunting enigma to effective provision of services to the urban population, especially in the developing world (Kayaga, Fisher & Franceys, 2009; World Health Organization [WHO], 1994). This has retarded global efforts in improving access to water supply services to vast populations in need. Access to safe water is one of the basic elements to human survival as attested to by the millennium

declaration of 2000, which set forth the Millennium Development Goals (MDGs). In the water sector, the MDGs targeted to reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015 (UN, 2000). Substantial effort and resources have been invested towards this undertaking, especially in the developing world. However, over 1.1 billion people still have no access to safe water and 80% of these live in sub-Saharan Africa, Eastern Asia and Latin America (WHO, 2007). As of the year 2010, over 50% of the world population (3.3 billion people) was urban and this is projected to shoot to over 5 billion people by 2030, with most of the growth occurring in the smaller cities of developing countries (Nchito, 2010; WHO, 2008). This trend underscores the need for concerted efforts in improvement of services in the small towns of the developing world.

Since the early 1970's, the World Bank and other development agencies have been involved in urban water supply infrastructure improvement programs in Africa, Asia and the Latin America to improve the socio-economic situation of communities. However, poor operation of the water supply systems was noted as a major obstacle to attainment of the goals of the development programmes (Andreás, Gaush, Haven & Foster, 2008). Interventions such as private sector participation in delivery of urban water services were promoted in order to improve quality of operation services in urban water supply systems (Baker, 2008; Ramanadham, 1989).

In Africa, the need for improved service delivery in small towns is strengthened by the steady growth in urbanization trends in the region. With the urbanization rate on the continent averaging at almost 5% , more than half of the African population is likely to reside in urban areas by 2020 (Castro, 2009). Unfortunately, it is the same region characterized by poor

operation services in the existing water supply systems, which manifests itself in deteriorating quality of service provision, diminishing financial returns, poor customer satisfaction and total collapse in extreme cases (Mugabi & Njiru, 2006).

Uganda's political turmoil in the 1970−80's slowed the country's economic growth as it did the management of public enterprises and infrastructure. Most urban water supply systems under the National Water and Sewerage Corporation [NWSC] witnessed unprecedented decline and were close to total failure (Muhairwe, 2009). During the period 1990-2001, the economy improved with substantial investment in the rehabilitation of infrastructure, including urban water supply systems. The Government of Uganda, through the Directorate of Water Development (DWD), then operated the rehabilitated or new urban water infrastructure, but with limited improvement in quality of operation services in the systems (MWLE, 2003a). The introduction of the private sector to operate the small town water supply systems improved the situation, but also to a limited extent (Richards et al., 2008).

As of July 2011, there were 256 small towns in Uganda with piped water supply systems, out of a total of about 800 small towns identified in Uganda (MWLE, 2003b; MWE, 2011). At an alarming 5.2% urbanization rate in Uganda (Mugisa & Candia, 2011), the number of small towns will continue to grow and thereby demanding increased infrastructure service provision. However, operation services in the towns with piped water systems still remains inadequate, requiring supportive interventions from the Ministry of Water and Environment (MWE, 2009c). There was therefore need to explore all possibilities to improving the quality of operation services, especially in the small town water supply systems in order to realize the intended benefits of the water supply systems.

1.1.2 Theoretical Background

The Resource Mobilization (RM) theory, a social movement theory developed in the 1970's by McCarthy and Zald (1973), was adopted to describe, understand and explain the organizational factors affecting the quality of operation services in small town water supply systems. The McCarthy and Zald (1973) approach, the *organizational-entrepreneurial model*, which focuses on how groups (organizations) pursue their goals by mobilizing and managing resources is most suited to the study of modern organizations. The theory emphasizes that for organizations to achieve their intended objectives, resources have to be mobilized, well managed and collectively controlled. The fundamental objective of operating a water supply system is to provide quality services to its customers (WHO, 1994). The theory postulates that society is composed of rational individuals who will provide resources and participate in the organizational activities as long as there are perceived benefits that outweigh the costs.

The Resource Mobilization theory, however, does not satisfactorily explain the organizational objectives of service quality and the level of control in organizations. The quality of operation services is best described as perceived by the customers benefiting from the service, hence the SERVQUAL/RATER model was of additional importance (Zeithaml, Parasuraman & Berry, 1990). The level of organizational control in the small town water supply systems was assessed basing on the Four Levers of Control (LOC) Framework (Simons, 2000). The framework provides modern day managers with the tools to measure value creation in the organization (Simons, 2000).

1.1.3 Conceptual Background

The organizational factors affecting the quality of operation services in small town water supply systems were conceptualized basing on the Resource Mobilization theory supported by the SERVQUAL model and the Levers of Control framework as further described. The Resource Mobilization theory provides that an organization depends upon resources to achieve its objectives. The theory postulates that these resources may be internal resources or mobilized from the external environment (McCarthy & Zald, 1973). Internal and external resources constituted the indicators to measure resource availability in a water supply system.

The Resources Mobilization theory further provides for participation of the individuals in the activities of the organization as they perceive benefits of being involved. This can be viewed as a continuum from high to low participation in the operation of the water supply system. High participation of community members in the management of the water supply systems favors community based management approaches, while low participation of the community in the management of the water supply systems paves way for private sector management approach. Community based management and private sector were assessed as the indicators of community participation in the operation of the small town water supply systems.

Effective control is another aspect postulated by the Resource Mobilization theory as affecting achievement of organizational objectives. Simons (2000) Four Levers of Control, however, provides a more refined framework for assessing the level of organizational control. The framework suggests belief systems, boundary systems, interactive control systems and diagnostic control systems as the main focus for driving organization value (Simons, 2000).

The dependent variable, quality of operation services, was further described by the

SERVQUAL model, which is a customer centered approach to describing service quality. The model proposes analysis of the service quality on the attributes of tangibles (quality of the water supplied and other system infrastructure), reliability of service, responsiveness, assurance and empathy to customers (Zeithaml, Parasuraman & Berry, 1990). WHO (1994), however, condenses the water operation services quality attributes to tangibles (potability of water supplied and quality of physical infrastructure), reliability and responsiveness to customer needs, which were the adopted indicators.

1.1.4 Contextual Background

The government of Uganda recognizes provision of safe water to the population as a key intervention to promoting and sustaining national development as it is enshrined in the National Development Plan (2010-2015) strategic objectives (GoU, 2010). Guided by the millennium development targets, the Ministry of Water and Environment set to achieve 100% safe water coverage in urban areas by the year 2015, but this aspiration has been deterred by a number of factors including lack of adequate financing and poor quality of operation services in existing water facilities leading to reduced functionality (UNDP, 2007; MWE, 2008). The Directorate of Water Development (DWD), the technical arm of the Ministry of Water and Environment, is thus being drawn to address operational challenges in existing water supply systems instead of concentrating the meager resources to planning and development of new facilities in order to increase service coverage. In the small towns of Uganda, on average only 54% of the population was served with safe water supply as of July 2011 (MWE, 2011), stretching to as low as 28% in some towns like Koboko (Amvesi, 2010). This called for doubling of efforts in the development of new water supply systems, but this would only bear

fruit if the existing water supply systems were operated to a satisfactory quality.

Attempts to improve quality of operation services in urban water supply systems included direct operation of the water systems by DWD, involvement of private water operators and extending financial grants to meet technical failures. These interventions, however, were insufficient to address the operational challenges in the small town water supply systems as they only concentrated on the technical aspects, without due consideration to the organizational factors that affected the operations (MWE, 2009c).

1.2 Statement of the Problem

Improved quality of operation services leads to increased customer satisfaction which is key to the survival of any organization (Brown, Blackmon, Cousins & Maylor, 2001; Hansen & Ghare, 2002). In 2003 the Government of Uganda realized the need to improve the quality of operation services in urban water supply systems and initiated institutional reforms with the aim of ensuring efficient, sustainable, and affordable service provision. Significant improvements were realized in the quality of operation services in the small towns but still fell below customer expectation (MWE, 2009c). The revenue base for most schemes remained insufficient to break-even (MWE, 2010), customer service demands were not promptly addressed and functionality still lingered in the range of 80% against target of 95% (Azuba, 2010; MWE, 2009a; Nuwamanya, 2010).

The interventions to improve the quality of operation services only concentrated on technical and institutional interventions. This was necessary but not sufficient to ensure high quality of operation services in the systems (Muhairwe, 2009; WHO, 1994). Organizational factors

received little attention, which contributed to the challenges experienced (MWE, 2009c). There were no studies conducted on the effect of organizational factors on the quality of operation services in the small town water supply systems. If these organizational factors were not understood and addressed, the quality of operation services in the small towns would remain low, crippling the systems to total collapse. This study therefore fills the gap by assessing how the organizational factors of resource availability, community participation and organizational control affect the quality of operation services in small town water supply systems in central Uganda.

1.3 General Objective

The general objective of the study was to assess the organizational factors affecting the quality of operation services in small town water supply systems in central Uganda.

1.4 Specific Objectives

The specific objectives were:

i. To assess the extent to which resource availability affects the quality of operation services in small town water supply systems in central Uganda.

ii. To assess the effect of community participation on the quality of operation services in small town water supply systems in central Uganda.

iii. To assess the effect of organizational control on the quality of operation services in small town water supply systems in central Uganda.

1.5 Research Questions

The study sought to answer the following research questions:

i. To what extent does resource availability affect the quality of operation services in small town water supply systems in central Uganda?

ii. To what extent does community participation affect the quality of operation services in small town water supply systems in central Uganda?

iii. To what extent does organizational control affect the quality of operation services in small town water supply systems in central Uganda?

1.6 Hypotheses of the Study

The following hypotheses governed the study:

i. Resource availability significantly affects the quality of operation services in small town water supply systems.

ii. Community participation significantly affects the quality of operation services in small town water supply systems.

iii. Organizational control significantly affects the quality of operation services in small town water supply systems.

1.7 Conceptual Framework

The organizational factors affecting the quality of operation services in small town water supply systems in central Uganda were conceptualized as shown in Figure 1. The organizational factors of resource availability, community participation and organizational control constituted the independent variable affecting the dependent variable of quality of

operation services in small town water supply systems. Indicators for the independent variable were derived basing on provisions of the Resource Mobilization theory (McCarthy & Zald, 1973) and the Four Levers of Control framework (Simons, 2000).

The Resource mobilization theory asserts that organizational resources (internal and/or external) should be collectively controlled to meet organizational objectives. Internal and external resources constituted the indicators for resources in the small town water supply systems.The Resource Mobilization theory further provides for participation of community members in organizational activities only if they perceive benefit of participation. In the water supply system, community participation is evident in community management models, while in the absence of community participation, private sector lead management models override.

Simons (2000) postulated Four Levers of Control as belief, boundary, interactive and diagnostic control systems as a comprehensive framework for assessing organizational control. These Four Levers of Control therefore formed the indicators for measuring organizational control. Narayana and Rao (1987) contend that effective organizational control is essential to ensuring quality of products and services.

The dependent variable was derived from the SERVQUAL model (Zeithaml, Parasuraman & Berry, 1990). The model analyses service quality on the attributes of tangibles, reliability, responsiveness, assurance and empathy to customers, but WHO (1994) proposes three attributes of tangibles, reliability and responsiveness to be comprehensive in the management of water supply systems.

Independent Variable	Dependent Variable
Organizational factors: **Resources availability**: • Internal resources • External resources **Community participation**: • Community based management • Private sector management **Organizational control**: • Belief control systems • Boundary control systems • Interactive control systems • Diagnostic control systems	**Quality of operation services in small town water supply systems:** • Tangibles (Potability of water supplied and physical infrastructure) • Reliability of services • Responsiveness to customers

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mall Town Water Supply Systems

d, 1973; Simons, 2000; WHO, 1994 and Zeithaml, Parasuraman & Berrry, 1990).

1.8 Significance of the Study

This study may benefit a number of stakeholders in the urban water and sanitation sub-sector. Understanding the effect of organizational factors on the quality of operation services in small town water supply systems in central Uganda may benefit the Directorate of Water Development to re-focus and extend support to small town water systems to include organizational mentoring. Improving the quality of operation services in small towns would ensure that existing urban water systems are run more efficiently and sustainably, hence allowing the DWD to concentrate on development activities to cover the entire urban population of Uganda.

Recommendations from the study are particularly beneficial to the newly established Central Uganda Umbrella organization, a regional organization aimed at assisting small towns in central Uganda to address operational challenges. Critical factors identified provide pertinent information to the development of the new organization's strategies and action plans. The study also contributes to the general academics of managing water supply systems in small towns of the developing world.

1.9 Justification of the Study

Several studies have been undertaken addressing operations of water supply systems, but most of these concentrated on rural water supply systems or large urban water system (Nuwamanya, 2010; Vezina, 2002; WaterAid & Tearfund, 2003; WHO, 2000). Rural water supply schemes are mostly based on community management concepts, while the large towns in Uganda are managed by a conventional water utility – the NWSC. Small towns water supply systems tend to bear characteristics of the large towns and rural setting as well

(Vezina, 2002; Caplan & Harvey, 2010). The management of water supply system in small towns therefore has developed as a hybrid between the large towns and rural concepts. The differing institutional setup in the management of the water systems raised peculiar operational challenges, which required critical analysis to be addressed (Mugabi & Njiru, 2006), to which this study was addressed.

1.10 Scope of the Study

The study had a geographical coverage of five districts in central Uganda, where most of the small piped water supply systems exist. These were; Wakiso, Mukono, Butambala, Buikwe and Nakaseke districts. The central region of Uganda was purposively selected for the study because it has the highest rate of urbanization in the country.

A time scope of 2003-2010 was considered for the study, taking into consideration the period when the management concept of private water operators was introduced in the operation of small town water supply systems in Uganda. Five towns were identified, which have been operational in the specified time frame and have population range of 500-15,000people and these were Kakiri (Wakiso district), Kibibi (Butambala district), Nakifuma (Mukono district), Nkokonjeru (Buikwe district) and Semuto (Nakaseke district).

Resource availability, community participation and organizational control were the organizational factors assessed to affect the quality of operation services in water supply systems in small towns of central Uganda.

1.11 Operational Definitions of Terms and Concepts

Central Uganda region: The Uganda Bureau of Statistics (UBOS, 2010) identifies a total of

15 districts to constitute the central region of Uganda. For this study, the districts located in the immediate vicinity of Kampala city constituted the central region and these are: Mukono, Wakiso, Nakaseke, Buikwe and Butambala.

Operation services: Refers to all activities in the water supply system from water production to delivery to the customer including management of client and public relations. It encompasses all activities needed to run a water supply entity, except for new constructions.

Organizational factors: Resource availability, community participation and organizational control were the organizational factors assed in this study.

Service quality: A measure of how well a delivered service matches the customers' expectations.

Water supply system: Water supply system where potable water is conveyed through a pipe network and consumed at water faucets (tap stands).

Private operator: A private liability company or an individual contracted to operate a water supply system.

Resources: Financial resources available to the system. This has been so taken because almost all resources for operation of urban water supply system can be obtained with adequate funding in the area of study.

Small town: Includes settlements with population between 500 to 15,000 people. According to the DWD classification, this includes rural growth centers (population 500 to 5,000) and small towns (population 5,000 to 15,000).

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In order to build a strong understanding of the research topic with regard to what has already been studied, extensive literature review was undertaken during the course of the study. The review covered policy and working documents in the Ministry of Water and Environment, journals, internet based materials, publications, speeches and technical presentations, newspapers and periodicals. This chapter is structured into the following sections: theoretical review, resources availability and quality of operation services in urban water supply systems, community participation and quality of operation services in urban water supply systems, organizational control and quality of operation services in urban water supply systems in line with the research objectives. The chapter concludes with a summary of the reviewed literature.

2.1 Theoretical Review

The study was grounded on the Resource Mobilization theory supported by the Simons Levers of Control and the SERVQUAL model. The Resource Mobilization theory, a social movement theory developed in the 1970's by McCarthy and Zald (1973), explained adopts the organizational-entrepreneurial perspective which focuses on organizational dynamics to achieve stated objectives. The theory holds that an organization must mobilize both internal and external resources to enable it undertake organizational activities for self preservation and achieving stated objectives (McCarthy & Zald, 1973). According to the theory, mobilization

of resources constitutes much more than simply accumulating the resources. The prosperous organization must assemble resources (material and non-material resources) and place them under collective management and control for the purpose of pursuing organizational objectives (McCarthy & Zald, 1973). Kendall (2006) complements the theory by asserting that without resources, social movements (organizations) cannot be effective in pursuing their intended goals.

The Resource Mobilization theory further postulates that individuals will willingly participate in the activities of the organization when there are perceived benefits to participation. This therefore bears on the level of community participation in the running of the water supply system, which in turn determines the model of water services management as either community based management or private sector management.

Pfeffer and Salanick (1978) took the discussion on organizational resources to a different level by suggesting that an organization is dependent on the environment for its resources and this dependence has substantial effect on the organizational activities (the resources dependence theory). The organization has to adjust/improve its level of performance in order to satisfy the environment's needs. This translates to improvement of service quality in operations, if the water supply systems are to gain the required resources from its internal and external environment.

A customer centered model, the SERVQUAL/Rater model, was adopted to compliment the study of the quality of operation services in small town water supply systems. The SERVQUAL model aids in understanding the gap between the organization's service quality performance against the customer service quality needs (Zeithaml, Parasuraman & Berry,

1990). The model is efficient in helping an organization shape up their efforts in bridging the gap between perceived and expected service quality levels (Buttle, 1995; Paquette, Bellavance, Cordeau and Laporte, 2011).

Organizational control is an important aspect for an organization to achieve its strategic objectives, but unfortunately, this dimension of management has received limited theoretical reviews (Narayana & Rao, 1987). Simons (2000) postulates that traditional management theories provide for limited control over results, which is inadequate to maximize performance of organizational strategies in the modern world. He provided four Levers of Control, which were based upon to understand organizational control in the small towns.

2.2 Resources Availability and Quality of Operation Services in Water Supply Systems

All organizations depend upon resources to execute activities aimed at achieving their organizational objectives (Kendall, 2006). Pfeffer and Salanick (1978) categorize the organizational resources as capital inputs, knowledge and equipment, raw materials, sales of outputs and labour inputs. For this study, resources have been operationalized to refer to financial resources, under the assumption that all other inputs may be obtained at a given price within the central region. The financial resources may therefore be broadly generalized as internally generated or solicited from the external environment as discussed hereunder with respect to small town water supply systems.

2.2.1 Internal Resources

In Uganda, urban water supply systems are designed and implemented so that the systems

can, at least, generated enough revenue to sustain operational requirements (MWE, 2009d). This revenue is realized from water sales and any fees levied by management including basic service fees, connection and re-connection fees. The ability of the customers to meet these charges is determined by the ability to pay for the service (determined by the household income levels), but more importantly the willingness to pay for the service (Devi, Joseph, Karunakaran, Anurdha & Devi, 2009; Hensher, Shore & Train, 2005). Griffin and Mjelde (2000) opine that the willingness to pay for the water services is determined by the customers' valuation of the quality of services offered.

On the other hand, Khatri and Vairavamoorthy (2007) approach the issue differently by asserting that customers' low willingness to pay for services cripples the resources availability to run the water supply system resulting into poor quality services. Smet and van Wijk (2002) complement that increasing the internal resource base of the water supply systems is the most sustainable way of meeting the specific demands of the customers, hence increasing the sustainability of the service.

Whether the issue is the willingness to pay or the ability to pay for the services, Nchito (2010) contends that there is usually very low revenue making opportunities in the small towns of the developing world and yet the demand to provide service infrastructure is high. This results into a situation he terms, *'service squeeze'*, in which the service provision goes to the minimum quality. Internal resources from an organization's operations may not be relied upon entirely for organizational performance, but could be further supplemented by external resources as discussed further on.

2.2.2 External Resources

External resources to the urban water supply systems are instrumental to the operations of small town water supply systems in Uganda. These resources have mainly been in form of conditional grants from government and development partners (MWE, 2009d). On commissioning of an urban water and supply system, management of the water supply system becomes the full responsibility of the local government (GoU, 1995). Due to capacity limitation at the local level, the central government, through the Directorate of Water Development, continues to offer technical and budgetary support to system operations (MWE, 2009d). While this was envisaged to be a temporally intervention so that a few needy schemes could benefit, many systems have failed to break-even (Azuba, 2010). It has to be noted that the total number of schemes benefiting from the conditional grant has increased from 63 in FY 2002/3 to 137 in FY 2009/10 (MWE, 2010), at the same level of sector funding, implying that the amount allocated to each individual town has significantly declined. This diminished conditional grant therefore becomes insufficient to meet the vast O&M requirements.

Alternative thoughts in the Ministry of Water and Environment believe that these subsidy grants only serve to increase dependence of the water supply system on central government hence reducing sustainability prospects (MWE, 2006). Gulanyi (2001) subscribes to this school of thought and asserts that subsidies to operations of poorly performing urban water supply systems have been misconceived and mismanaged, only to hurt the financial viability of systems and leading to further deterioration of the quality of service delivery. He contends that proper planning and management of the infrastructure should be the focus in order to improve the quality of operation services.

Like any other business organization, urban water supply systems may source for external sourcing through open market borrowing (Murphy, 1996). This has not been explored in the water sector but offers great hope to external resources mobilization for urban water supply systems (MWE, 2009b). Muhairwe (2010) observes that conventional sources of investment finance are rapidly fading mainly due to the increasing competition for available resources by Governments, and the dwindling of Direct Donor Resources and as a result, urban water service providers will have to seek for alternative sources of finance if they are to meet the demands of their customers.

Literature findings therefore suggest that organizations are dependent upon internal and external resources to in order to achieve stated objectives. In a water supply system, the key organizational objective is provision of quality operation services. It is, however, evident that small water supply systems have unutilized potential for increasing both internal and external resources. Sustainable options for increasing resources may assist the organizations to meet the customers' service quality expectations.

2.3 Community Participation and Quality of Operation Services in Water Supply Systems

Social characteristics of small towns are rather dynamic depending upon the size, proximity to large cities and other resources in the town. This creates a divergent level of community involvement in development programmes like management of water supply systems, which has given rise to a number of models that can be applied in operation services (Robinson, 2003). High community participation favors community based management models, while relatively low community participation will favor private sector management models. The

effect these differing management models may have on the quality of operation services is discussed as follows.

2.3.1 Community Based Management Model

Community management systems leverage on the commitment of the community members to operate the water supply system. Smet and van Wijk (2002) analyze different levels of community managed systems and these rely on local committees to manage, single tap stands, part of the water supply system or the entire water supply system. They further assert that the quality of operation services under these management models will depend upon the level of commitment of the community members. The ability of the community to offer high quality of operation services is constrained by the capacity of the community members to manage expanding waters supply systems and the undefined legal status of the committees hence inability to acquire loan financing (Robinson, 2003).

Despite the legal and capacity challenges, there is a high level of ownership in community managed systems, which has been instrumental in ensuring improved operations services (Ahmed & Rahman, 2003). Robinson (2003), however, cautions that this improvement in service quality has only been observed as long as systems have remained small. As the systems expand, they become unsustainable to manage at community level.

Van Ast, Rosa and Santbergen (2008) also believe that engendering the highest level of community participation is key to harnessing community satisfaction with projects, which would be the case with the water supply projects. They, however, caution that this might cause unnecessary decision making delays that may limit the ability to offer quality services.

On reviewing performance of the National Agricultural Advisory Services programme in Uganda, Parkinson (2009) shares skeptic opinions that the role of community participation is usually politically overstated and may not deliver the expected contribution to improving service delivery.

Baker (2008) analyses community participation in provision of urban water supply services and highlights a range of alternatives from community ownership to community governance approaches. He argues that community ownership options, where the community owns and runs water supply systems, have offered quality of services in only a fraction of cases. Community governance options, where the community mainly takes the decision making role while engaging private operators has offered improved success cases. Baker (2008) cautions that despite some successes noted in community management of water supply systems, there have been historically more cases where the model has failed to deliver the required quality of service provision. Where community management approaches have deemed insufficient, private sector lead management has been introduced as discussed below.

2.3.2 Private Sector Management Model

Private sector participation in operation of urban water infrastructure has been embraced as part of structural reforms to improve service delivery (Baker, 2008; Mamadou, 1996). The World Bank (2006) has promoted increased private sector participation in the management of urban water supply systems, asserting that they create a focus on service quality and commercial performance, make it easier to access financing and boost policy clarity and sustainability. The level of private sector participation ranges from management contract with

a private water operator to full divestiture of the water supply system (World Bank, 2006).

Hall, Lobina and de la Motte (2005), on the other hand, assess that these advantages have not been realized with the advent of the private sector participation in urban water management and this has resulted into widespread resistance to the management model. This view is supported by Muhairwe (2009), who argues that private sector lead management of utilities has been promoted as solution to operational challenges in the sector contrary to practical evidence. He submits that private firms were contracted to manage operations in Kampala area in the period 1997 – 2002, without noticeable improvement in quality of services delivered.

The MWE and Deutsche Gesellschaft für Technische Zusammenarbeit (2010), contend that the introduction of private sector in the management of small town water supply systems in Uganda has improved the quality of service provision. As of June 2011, there were a total of 14 private water operators managing 85 small town water supply systems in the country. There are, however, still challenges to be addressed to improve the situation including strengthened regulatory and monitoring framework, resource availability and technical capacity of the operators (MWE, 2010).

Literature findings therefore showed that community participation in management of water supply systems may lead to improved quality of services but within limited expansion of the water supply system. While there are benefits of private sector involvement in operation of small town water supply systems, cited examples have shown that these benefits may not be obvious in all cases.

2.4 Organizational Control and Quality of Operation Services in Water Supply Systems

Narayana and Rao (1987) express concerns that organizational control is one important area of management that has been neglected and least understood over the period and yet it is critical to the implementation of organizational strategies. Effective implementation of organizational strategy is the way organizations are able to offer quality services. Simons (2000) postulated Four Levers of Control in an organization that have been implored to explain the level of control in small town water supply systems as follows.

2.4.1 Belief Control Systems

Simons (2000) defines the belief systems as the explicit set of organizational definitions that senior managers communicate formally and reinforce systematically to provide basic values, purpose, and direction for the organization. He contends that beliefs are often communicated through a mission or vision statement and displayed in company documents and on company websites. Nieminen and Lehtonen (2008) evaluate control mechanisms and add *organizational values* to the organizational beliefs and contend that these help the workforce to work towards set goals and targets in performance including quality of services offered.

Liesegang, Kohler and Schaad (2006) term the belief systems as *social controls* in the organization, which involve efforts to persuade people to adapt to certain values, norms and ideas about what is good, important or praiseworthy in terms of work and organizational life. They stress that these systems are particularly important in large organizations where communication of organizational purpose becomes increasingly difficult.

2.4.2 Boundary Control Systems

Ouchi (1979) classifies boundary conditions as bureaucratic modes of control based on rules and surveillance. The boundary systems set the limits, rules and codes of business delineating the arena within which to operate (Simons, 2000). Merchant and Van der Stede (2007) argue that while boundary systems may ensure that achievement of stated quality objectives, they limit creativity for improvement owing to the negative nature in which they are stated. They hold that telling employees the expected goals through core values and mission statements is more productive than telling them what not to do as in the case of boundary systems.

2.4.3 Interactive Control Systems

Terry and Franklin (2002) relate interactive control systems to co-current measures giving direction, monitoring and fine tuning activities to ensure quality delivery of services. Nieminen and Lehtonen (2008) assess that interactive control can be achieved through such means as discussions, email communications, formal and informal events and team building measures. Li, Zhou and Zajac (2009) believe that this is one way of improving productivity in organizations, though it comes at a high level of management commitment and involvement.

Slack, Chambers, Harland, Harrison and Johnston (1995) argue that achievement of plans as set out at the beginning of an operation service is not usually guaranteed. There is always need to make adjustments along the way to the original plans in order to achieve the intended goal. This constitutes the interactive controls required to bring the operations to achieve the required quality of service.

2.4.4 Diagnostic Control Systems

Chen, Park and Newbury (2009) assert that the rationale for organizational control is to align company employees/activities to the overall objectives of the organization and one way of measuring this is through *ex-post* evaluations and taking corrective action, which defines diagnostic control systems. Terry and Franklin (2002) observe these control measures as feed-back control mechanisms, which rely on past performance to propose improvements for future action. Various tools may be employed in diagnostic control systems and these may include business plans, budgets, goal setting and activity schedules (Nieminen & Lehtonen, 2008).

Findings from literature have revealed that while organizational control is an important aspect to achievement of organizational objectives, its understanding and implementation are usually limited. Examples from several organizations showed that a mixture of formal and informal control mechanisms can help an organization improve service quality.

2.6 Summary of Literature Reviewed

Extensive literature was reviewed to understand the organizational factors affecting the quality of operation services in small town water supply systems. The Resource Mobilization theory provided insight that resource acquisition, management and collective control are key factors to achievement of organizational objectives. This supported the organizational factors under this study that resource availability, community participation in management and organizational control affect the achievement of organizational objectives in small town water supply systems (quality of operations service). Extensive literature showed that organizational resources may lead to increased organizational performance while alternative literature suggested that this is not usually guaranteed, especially when the resources are not well

controlled to achievement of certain objectives.

It also emerged that community members participation may yield improved community ownership, hence improved quality of services, but to a limited size of the water supply scheme. Literature reviewed also suggested that as the systems grow in size, private sector involvement may be the better option. Private sector participation was noted to have positive impact in certain areas and limited improvement in other water supply systems. Limited literature was available on organizational control, showing limited theoretical attention to this important subject.

It has also emerged that small towns differ in social-economic dynamics and therefore these factors may have different levels of significance in affecting the quality of operation services. There was no such study undertaken, therefore limited literature, to examine the extent these factors affect the quality of operation services in the small town water supply systems in central Uganda region. The researcher therefore opted to conduct a field survey to understand the extent to which the organizational factors of resource availability, community participation and organizational control affected the quality of operation services in small town water supply systems in central Uganda.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents a systematic methodology that the researcher employed to study the organizational factors affecting the quality of operation services in small town water supply systems in central Uganda. The chapter presents the research design, study population, sample size and selection, sampling techniques and procedure, data collection methods and instruments, procedure for data collection, measurement of variables and data analysis.

3.1 Research Design

A descriptive research design employing a cross-sectional survey was adopted for the research since it was conducted at a particular time using a selected sample of the population. Amin (2005) asserts that a cross-sectional survey is the most appropriate approach when the study is intended to obtain data from a sample of a population at a particular time. The approach was also chosen because the study aimed at describing the factors affecting the quality of operation services at this moment in time, with limited regard to the causes of the existing quality of the operation services. The survey utilized both qualitative and quantitative approaches in order to achieve adequate level of data triangulation, which helped to limit the biases and inadequacies of a particular approach (Barifaijo, Basheka & Oonyu, 2010; Kombo & Tromp, 2006). Bryman and Bell (2007) add that using both qualitative and quantitative approaches helps fill in information gaps that may not have been captured by one of the approaches.

3.2 Study Population

The study targeted five districts in central Uganda located in the vicinity of Kampala city, which were Mukono, Wakiso, Nakaseke, Buikwe and Butambala. A total of five water supply systems, which have a population range of 500 - 15,000 inhabitants and have been operational in the period of 2003 – 2010, exist in the study area. These five water supply schemes targeted by the study were Kakiri (Wakiso district), Kibibi (Butambala district), Nakifuma (Mukono district), Nkokonjeru (Buikwe district) and Semuto (Nakaseke district). The selected schemes had a combined population of 42,000 inhabitants, at the time of study (MWE, 2009b).

The total number of water supply connection in the five selected towns was 922 connections (MWE, 2009b). Due to limited time and resources available to conduct the study, the accessible population constituted only active house connections in the selected towns rather than the public connections (kiosks). This was so chosen because the household customers have regular interaction with the management of the water supply system, as opposed to the public consumers who only interact with the kiosk attendants. One adult was targeted to represent each household in the study. This gave an accessible population of 475 customers in the five towns. Table 1 shows the distribution of the customers in the selected water supply systems.

In addition to the customers identified in Table 1, other key stakeholders to the study included the operators for the water supply schemes, who are an average of six staff per scheme and the water supply board members who are five per scheme, in accordance with the water sector guidelines (MWE 2009d). This resulted into a total accessible population of 473 respondents (Table 2).

Table 1: Distribution of the Customers in the Selected Towns

S/N	District	Town	Town Population	Total number of connections (Public and house connections)	Number of active house connections
1	Wakiso	Kakiri	10,680	185	108
2	Butambala	Kibibi	6,189	172	98
3	Mukono	Nakifuma	6,098	45	34
4	Buikwe	Nkokonjeru	13,000	210	68
5	Nakaseke	Semuto	6,242	310	110
Total			**42,209**	**922**	**418**

Source: Adapted from MWE (2009a) and MWE (2009b)

3.3 Sample Size and Selection

It is possible to generate a sample that is representative of the accessible population, whose results may be generalized to the target population (Mugenda & Mugenda, 2003). It is important, however, that the characteristics of the study population be represented in the sample for the results to be valid. Using the Morgan and Krejcie sample size table (1970) cited in Barifaijo et al. (2010), the sample size was determined to be 253 respondents, as presented in Table 2.

Table 2: Study Sample Size Determination

Category	Population	Sample	Sampling technique
Chairpersons of water supply boards	5	5	Census
Managers, water operator	5	5	Census
Water supply board members	20	19	Simple random sampling
Water operators' staff	25	24	Simple random sampling
Customers (active household connections)	418	200	Simple random sampling
Total	**473**	**253**	

Source: Primary data

3.4 Sampling Techniques and Procedure

A combination of both probability and non-probability sampling techniques were employed to select the respondents to the study since the study employed both qualitative and quantitative approaches. Census approach was used to select the key informants to the study, who were; the water operator manager and water supply board chairpersons. Census was chosen for this sub-set because the number was small enough to be covered by the study. These key informants were all well informed about the management of the water supply systems and provided qualitative information for the study.

Simple random sampling was used in each town to select the customers to participate in the

study. These customers represented the beneficiaries of the service and provided the quantitative data to the study. The number of customers who participated from each town were proportionately determined from the overall sample size. The customer base list at the town water office was used to assign numbers to each customer, the numbers were then mixed together in a container and the researcher randomly selected the required number of respondents for the study.

3.5 Data Collection Methods

Several data collection methods were employed by the study in order to ensure reliability and validity of the research findings. These included collection of both primary and secondary data through documentary review, observation, questionnaire and interview methods. These are described further as follows.

3.5.1 Documentary Review

The documentary review method was employed to gather secondary data pertaining to the study. This is a helpful method in enriching the study with information on what has been undertaken, limitations and strategies in improving quality of operation services. Data was collected from the MWE/DWD, WSDF-Central, town council and town water supply offices, internet sources and various libraries.

3.5.2 Observation

Observation was used as a method to obtain primary data, especially on the state of infrastructure in the town water supply system. This is one of the most important methods in

ascertaining the state of disrepair of infrastructure (Davis and Brikké, 1995). It was chosen in this case because the researcher needed to evaluate the status of infrastructure (tangibles) in the town water supply systems, which is one of the indicators of quality of operation services.

3.5.3 Survey Method

Amin (2005) contends that a questionnaire is a cost-effective, confidential and most convenient method of collecting primary data from respondents covering a wide geographical area. This method was therefore most useful in collecting data from the five water supply systems selected for the study. The method was therefore chosen considering the large number of respondents expected in the study located in a wide geographical location of five districts of Wakiso, Mukono, Nakaseke, Butambala and Buikwe.

3.5.4 Face-to-face Interview

Face-to-face interview is a helpful method for obtaining in-depth qualitative data, which may not be obtained by any other method (Mugenda & Mugenda, 2003). Face-to-face interviews were therefore conducted with key informants to obtain enriched information about the quality of operation services in the towns under study. The key informants included chairpersons of the water supply boards and water operator area managers.

3.6 Data Collection Instruments

The data collection instruments used in the study were documentation review check list, observation check list, questionnaire and interview guide. These methods are further described as follows.

3.6.1 Documentation Review Checklist

The research adopted a documentary review checklist to guide in conducting a structured review of relevant documentation available on town water supply systems in Uganda, with particular reference to the central region. Appendix 1 provides the documentation review check list implored by the study.

3.6.2 Observation Checklist

An observation checklist was used as the instrument to obtain primary information on the state of infrastructure in the town water supply systems. Appendix 2 provides the observation check list used by the research team.

3.6.3 Questionnaire

The instrument used to collect primary quantitative data for the study was the questionnaire. Closed-ended questions were mainly used in order to facilitate smooth data analysis. Bryman and Bell (2007) agree that closed ended questionnaires are easier to analyses and compare answers of respondents. Appendix 3 provides the questionnaire that was used in the study.

3.6.4 Interview Guide

A semi-structured interview guide was used by the researcher to conduct face-to-face interviews. A semi-structured interview guide provided direction on the interview parameters, while at the same time availed opportunity for further probing. The researcher conducted the interviews in person in order to guard against any misrepresentation of responses by the research assistants. Appendix 4 provides the interview guide used in the study.

3.7 Pre-testing (Validity and Reliability)

Before the research instruments are used, it is important to pre-test them in order to improve the quality of the instruments, ascertain their ability to measure what they are intended to measure and ensure that the results are consistent. Mugenda and Mugenda (2003) recommend a sample of about 1-10% of the population and therefore 12 respondents were selected for pre-testing. The pre-test was conducted in Wakiso town, which has similar characteristics as the towns understudy, but was not in the sample due to higher population range.

3.7.1 Validity

The appropriateness of the instruments (the validity) was assessed by both face validity and content validity. The supervisors and selected experts from the Ministry of Water and Environment were approached to assess both the face and content validity of the instruments. The instruments were reviewed to ensure that they included an adequate and representative set of items that describe the key concepts of the study. The Content Validity Index (CVI) was then computed using the following formula:

Content Validity Index = (Number of items declared valid)/(Total number of items)

Taking the average score from five experts, the CVI for the research instruments was computed as 0.78, which meets the minimum threshold of 0.70 suggested by Amin (2005).

3.7.2 Reliability

The degree to which the instrument consistently measures what it is intended to measure (the reliability) was assessed by test-retest approach. The instruments were administered to a selected sample of 12 respondents and after a two weeks period, administered again to the

same sample and the two scores correlated to establish the consistency of the instruments. Table 3 shows the correlation results of the first and second tests. The correlation (coefficient of stability) obtained as 0.893 is high and significant showing a good test-retest reliability. Mugenda and Mugenda (2003) advocate for a minimum coefficient of 0.80 while Barifaijo et al. (2010) suggest that the correlation can be as low as 0.70 and still offer sufficient reliability.

Table 3: Test-retest Correlation Results

		Test Results 1	**Test Results 2**
Test Results 1	Pearson Correlation	1	.893**
	Sig. (2-tailed)		.000
	N	12	12
Test Results 2	Pearson Correlation	.893**	1
	Sig. (2-tailed)	.000	
	N	12	12

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Primary data

Internal reliability/consistency of the instrument was also tested by using results of the first test. The Cronbach's Coefficient Alpha was computed for all the study variables as indicated in Table 4. Barifaijo et al. (2010) recommend the use of Cronbach's Coefficient Alpha in determining reliability of attitude instruments that use the Likert scale. The results show that

the internal reliability of the instruments was ranging from a low of 0.6 to a high of 0.942. The low internal reliability in resources availability and quality of service constructs may be attributed to the divergent nature of the indicators adopted to measure the construct. This is, however, an accepted level of internal reliability according to Amin (2005).

Table 4: Results for Internal Consistency of the Questionnaire

Study variable	**Cronbach's alpha**		**Number of items**
	Test	**Re-test**	
Resources availability	0.613	0.609	8
Community participation	0.680	0.740	8
Organizational control	0.942	0.841	15
Quality of service operations	0.679	0.633	16

Source: Primary data

3.8 Procedure for Data Collection

Upon approval of the research proposal, the researcher obtained an introductory letter from UMI commissioning the research (Copies attached as Appendix 5). Considering the intensity of the data collection exercise and the limited time scope, two research assistants were engaged to assist in collecting quantitative data. The assistants were trained and then engaged in pre-testing the instruments. When the researcher was satisfied with the assistants' level of competence with the research instruments, they were dispatched to the study towns under the supervision of the researcher.

3.9 Data Analysis

Both qualitative and quantitative data collected from the field was analyzed in order to achieve the study objectives. The techniques implored for data analysis are described as follows.

3.9.1 Quantitative Data

Quantitative data from the field was edited to correct errors and omissions. The coding was verified to ensure exhaustiveness of capturing all the respondents' information. Statistical analysis was then done with the aid of the Statistical Package for Social Scientists (SPSS) to establish relationships between the variables. The statistical data analysis included descriptive and inferential analyses. Descriptive analyses measured central tendencies and dispersion of mainly background data. In order to be able to generalize findings to the wider population, inferential statistics were conducted to ascertain relationships of variables. A correlation analysis (relational analysis) was conducted to establish the relationship between the independent and dependent variables using the Pearson's correlation coefficient. The direction and strength of the relationships between was then analyzed by using Regression analyses. These analyses were possible because the data was made quantitative and linear by using the Likert scale.

The analysis of the study was conducted at 95% statistical confidence, implying an acceptable 5% margin of error (level of significance, $\alpha = 0.05$). This is a generally accepted level of significance in social sciences research (Amin, 2005; Mugenda and Mugenda, 2003).

3.9.2 Qualitative Data

Qualitative data from the interviews was used to enrich findings of the study. The researcher first read through all the responses to get familiar with the trend of responses. The researcher then identified emerging themes, which formed the basis for analyzing the data. The qualitative data was then analyzed for credibility, accuracy, consistency and usefulness to the research variables. Logical relationships were then identified and categorized in themes, which led to deductions about the study concepts and variables. Interpretations were made, compared to the quantitative data and formed the basis for making study conclusions and recommendations.

3.10 Measurement of Variables

Quantitative measurement of variables was achieved using nominal, ordinal and interval scales of measurement. Background data on respondents was suitably measured using the nominal scale, while some data like age, level of education or experience was measured on an ordinal scale since these measures have an order of '*moreness*' (Amin, 2005). An interval scale, based on the Five-point Likert scale was widely used to measure the respondents' attitudes towards the study variables.

The data collected from the field survey was analyzed and interpreted into findings as presented in chapter four in line with the research objectives. The data is presented in tables, figures, descriptions, correlations and regression analyses, which form the basis for rejection or upholding of the study hypotheses.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0 Introduction

This chapter presents the findings of the study, their analysis and interpretation. The findings are based on the primary and secondary data collected from documentary review, questionnaire, face-to-face interviews and observations conducted in the study area. The chapter presents a description of the data collected including response rates and the demographic characteristics of respondents. An analysis and interpretation of the study findings according to the objectives of the study is then conducted followed by analysis and interpretation of the relationships between the study variables. Other emerging findings in the study are finally presented to conclude the chapter.

4.1 Response Rate

The study targeted a total of 253 respondents in five small town water supply systems of Kakiri, Kibibi, Nakifuma, Nkokonjeru and Semuto in the central Uganda region. The study respondents included water operators, water supply and sanitation board members and household customers in the water supply areas. A total of 191 respondents representing 75.5% of the targeted respondents participated in the study. Table 5 shows the response rate to the study by respondent category.

The lowest response rate (60.0%) was registered with the chairpersons of water supply boards who could not be reached for interview due to busy schedules. Other water supply board members were, however, available in the towns under study with a response rate of 84.2%.

Table 5: Summary of Response Rates

Category	Targeted sample	Responses	Response rate (%)
Chairpersons of water supply boards	5	3	60.0
Managers, water operator	5	4	80.0
Water supply board members	19	16	84.2
Water operators' staff	24	20	83.3
Customers (active household connections)	200	148	74.0
Total	**253**	**191**	**75.5**

Source: Primary data

Targeting any adult in a household helped to get a good response rate by the consumers at 74.0%. Overall, the response rate was 75.5%, which can be considered a high response rate. The high response rate indicates that the study findings are representative of the selected sample, hence the study population. This high representation of the sample therefore is an indicator to high possibility of accuracy of the study findings.

4.2 Demographic Characteristics of the Respondents

Demographic characteristics of the survey respondents may be helpful in understanding certain aspects of a study. For this study, age, gender, level of education and type of occupation were considered important to the study and the findings are described further on.

4.2.1 Age of Respondents

Majority of the respondents (40.2%) were aged between 36-50years. Only 2.2% of the respondents were below the age of 20. 37.0% of the respondents were between 20-35 years old while 19.6% were aged 51-65years old. Only 1.1% fell in the age bracket above 65years old. Table 6 shows the age distribution of the respondents.

Table 6: Distribution of Respondents by Age Group

Age group	Frequency	Percent
Under 20 years	4	2.2
20-35 years	68	37.0
36-50 years	74	40.2
51-65 years	36	19.6
0ver 65 years	2	1.1
Total	**184**	**100.0**

Source: Primary Data

The results of the study are indeed consistent with the Uganda Bureau of Statistics national demographic survey in which only 2.8% of the Ugandan urban population is above the age of 65 years and 29.4% of the urban population lies between 20-35 years. The percentage of respondents in the age group 36 – 65 is however higher than the national demographic study because this study only targeted adults (household heads), which is also the reason for the

very low percentage in the age group below 20 years old. The age distribution of the respondents therefore implies that the respondents to the study were of mature understanding and were able to comprehend the variables of the study and provide reliable responses.

4.2.2 Gender of Respondents

Gender is an important consideration in water supply dynamics since the largest share of water users in small towns of Uganda are the domestic consumers. In the survey, 46.7% of the respondents were female while 53.3% were male. Figure 2 shows the distribution of respondents by gender.

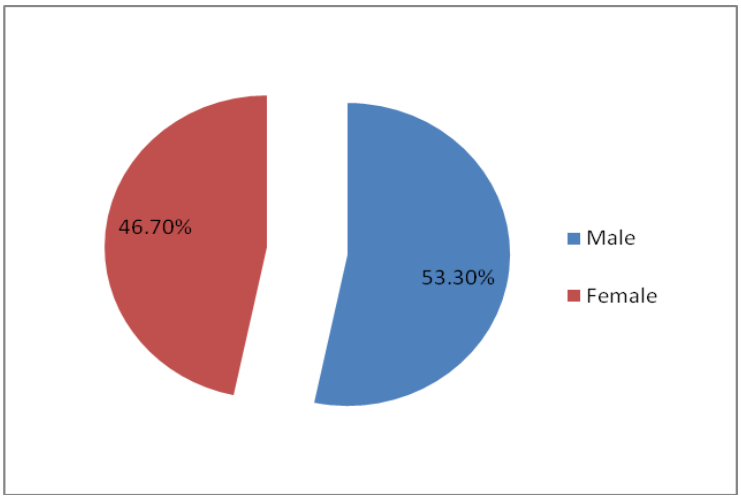

Figure 2: Distribution of Respondents by Gender

According to the Uganda Bureau of Statistics, the composition of Ugandan population is estimated at 52% female and 48% male, though the household headship in the urban areas is 66.9% male and 33.3% female. The results of the study are therefore consistent with the survey since more males participated. The percentage of females is higher than the average household headship because more women participate in domestically inclined issues (like water) even when there is a man heading the household. The balanced gender of the

respondents therefore indicates that the responses provided were representative and not biased to any gender group.

4.2.3 Highest Level of Education of Respondents

The level of education attained was considered an important variable since the study objectives included aspects that would be best understood with some education for example organizational control. Table 7 shows the highest level of education attained by respondents.

Table 7: Distribution of Respondents by Level of Education

	Frequency	**Percent**
None	32	17.4
Primary	53	28.8
Ordinary Level	44	23.9
Advanced Level	23	12.5
College and Above	32	17.4
Total	**184**	**100.0**

Source: Primary Data

Majority of the respondents (82.6%) had attained some level of education with 28.8% having completed primary education, 23.9% having completed ordinary level, 12.5% completed advanced level and 17.4% having attained college and above level of education. The study findings are consistent with the Uganda Bureau of Statistics analyses in which the Central

region of Uganda (excluding Kampala) has the highest literacy rate in the country (80%). The results therefore suggest that the respondents were able to comprehend the questions and issues raised in the study and provided informed responses.

4.2.4 Occupation of Respondents

Occupation of the respondents was considered important to the study owing to its significance on resources availability to the water supply system. Respondents with/without any occupation would have different opinions to resources contribution to the water supply system. Figure 3 shows the distribution of respondents by occupation.

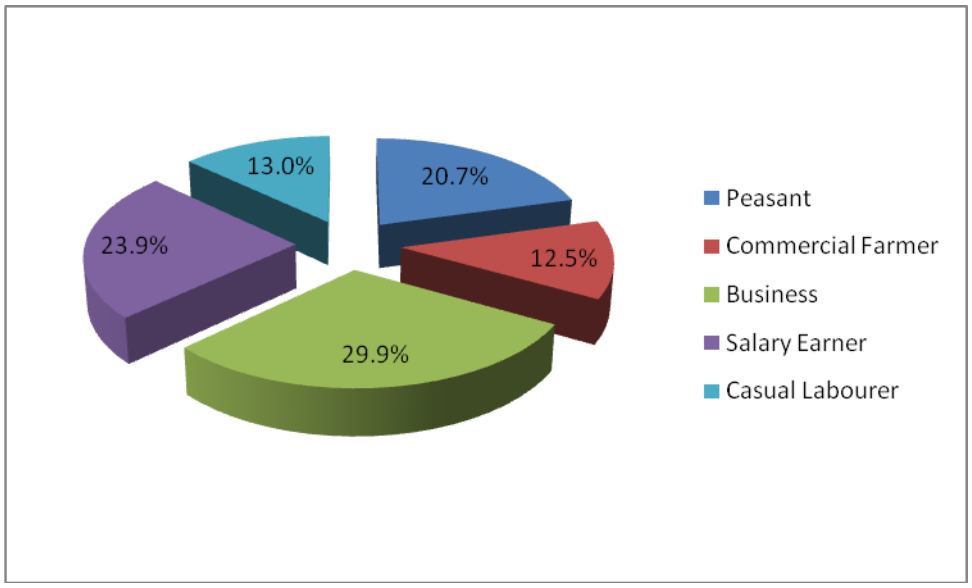

Figure 3: Distribution of Respondents by Occupation

The majority of the respondents (29.9%) were involved in business, 20.5% peasants, 12.5% commercial farmers, 23.9% salaried earners while 13.0% were casual labourers. This is a representative trend in central Uganda area as supported by to the Uganda Bureau of Statistics, which estimates the national unemployment rate at only 6.9% in the urban areas of Uganda. The results indicate that the respondents represented the occupation distribution of

the study area and therefore were capable of providing a balanced opinion, especially on resources to the water supply systems.

4.3 Analysis and Interpretation of Study Findings

The independent variable in the study comprised of three dimensions of resource availability, community participation and organizational control as they affect the dependent variable of quality of operation services in small town water supply systems of Uganda. The findings on each of the dimensions in the five towns visited are presented in the following sections.

4.3.1 Research Objective Number One: Resources Availability and Quality of Operation Services in Small Town Water Supply Systems

Respondents to the study were required to state their opinion on the availability of resources to the water supply system. For this study, resources were operationalized to refer to financial resources since it was assumed that any other resources for operating a water supply system may be easily obtained within the study area. Table 8 summarizes the opinions of the respondents to resource availability in the small town water supply systems.

Table 8 shows that the majority of respondents (70.1%) believed that customers were willing to pay their bills and that 77.2% had the ability to pay their bills. In addition, the majority of the respondents responded to promptly receiving their bills (88.0% in agreement). However, only 51% of the respondents believed that the water operator collected the entire amount billed to the consumers. Documentary evidence also showed low collection efficiencies in the range of 71% of the billings in all the small town water supply systems visited.

Table 8: Frequencies on Resource Availability in Small Town Water Supply Systems

Parameters	Responses									
	SA		A		N		D		SD	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Internal resources										
In my opinion, customers are willing to pay their water bills	28	15.2	129	70.1	19	10.3	8	4.3	00	0.0
In my opinion, the customers have the ability to pay their water bills	20	10.9	142	77.2	15	8.2	7	3.8	00	0.0
In my opinion, all the customers promptly receive bills for water consumed	53	28.8	109	59.2	2	1.1	20	10.9	00	0.0
In my opinion, the operator collects all the revenue due to the water supply system	8	4.3	51	27.7	20	10.9	90	48.9	15	8.2
External resources										
In my opinion, the water supply system obtains grants from central government (MWE) to run its operations	10	5.4	28	15.2	11	6.0	75	40.8	60	32.6
In my opinion, the water supply	01	0.5	7	3.8	20	10.9	94	51.1	62	33.7

Parameters	Responses									
	SA		A		N		D		SD	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
system obtains from the local government (District or Town council) to run its operations										
In my opinion, the water supply system solicits for funds from NGOs/ Development partners to run the system	01	0.5	16	8.7	15	8.2	88	47.8	64	34.8
In my opinion, the water supply system obtains commercial loans to run operations	02	1.1	08	4.3	23	12.5	68	37.0	83	45.1

Key: SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree

Source: Primary Data

The low collection efficiency highlighted as one of the major operational challenges through interviews with key staff. One respondent from Nkokonjeru town intonated that:

"I do not usually remember to go to the office to pay my water bills, in the past they used to come and collect the money from home, but they do not come any more."

From the interview results, the water operators concur that there were problems in collecting revenue from the customers because as the customer base grows, so does the administrative

cost of collecting the dues. Lack of improved banking culture in the small town category was also mentioned as one of the reasons the system could not rely on banking to collect the revenue from the customers. The results showed that there was relatively high willingness and ability to pay for the water supply services in the small towns but the internal resources availability to the water supply systems was constrained by poor collection efficiencies, where the systems did not collect all the revenue due to them.

The results also showed that the majority of the respondents believed that the water supply systems did not have adequate external resources. A clear majority of 73.4% disagreed to the fact that the water supply systems received external resources from the Central Government. A higher percentage (84.8%) did not believe that the Local Governments supported the water supply systems with any resources. There were also limited external resources from other NGOs and Development Partners directly to the water supply systems (82.6% in disagreement). Sourcing for financing on open market borrowing was also a limited as 82.1% disagreed to the fact that the water supply systems obtained any commercial loans. The external resources to the water supply systems were therefore only in the form of conditional grants from Central Government. Table 9 shows the external resources (Conditional Grants) for the water supply systems under study for the financial years 2010/11 and 2011/12.

Interviews with the water operators and water board members revealed that the water supply systems indeed had problems attempting to borrow resources from banks and micro finance institutions. The main reason advanced for their inability to access loan financing was the perceived high risk of lending to these schemes and lack of proper business documentation required by the institutions. The high risk was due to the fact that financing institutions

believe that the assets of the water supply systems cannot be auctioned in case of default, hence high potential to lose funds loaned to the water supply systems.

Table 9: Central Government Conditional Grants to Study Area Water Supply Systems (FY 2010/11 and FY 2011/12)

S/N	Town water supply system	Annual conditional grant for FY 2010/11 (Million UGX)			Annual conditional grant for FY 2011/12 (Million UGX)		
		Energy Subsidy	System specific	New connections	Energy Subsidy	System specific	New connections
1	Kakiri	-	-	18.0	8.0	-	12.0
2	Kibibi	-	-	18.0	6.0	-	10.0
3	Nkonkonjeru	-	-	20.0	8.0	-	16.0
4	Nakifuma	-	34.0	-	-	-	20.0
3	Semuto	-	-	-	-	20.0	-

Source: MWE Budgets and Conditional Grant allocation Schedules

Analysis of the results therefore indicated external resources available to the water supply systems were low considering there was limited support from the Central Government, Local Government, NGOs/Development Partners and the open market. The limited grants received were also restrictive in use and did little to help improve quality of operation services, as stated by the sub-county chief of Kibibi.

"The pump has been (broken) down for the last four months and we are looking for resources to repair it. Unfortunately we cannot use part of the grant because it is intended for new

connections. The government should allow us to use part of the conditional grant to address such pressing issues, which cannot be foreseen."

4.3.2 Research Objective Number Two: Community Participation and Quality of Operation Services in Small Town Water Supply Systems

The study sought the respondents' opinions on the level of community participation in the management of the water supply system. Frequencies of the views of the respondents are presented in Table 10.

Table 10: Frequencies on Community Participation in Small Town Water Supply Systems

Parameters	**Responses**									
	SA		**A**		**N**		**D**		**SD**	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Community management model										
Community members are willing to participate in the management of the water supply system	43	23.4	109	59.2	21	11.4	07	3.8	04	2.2
Community members have capacity to manage the water supply system	05	2.7	36	19.6	69	37.5	58	31.5	16	8.7
Community members attend meetings to discuss water supply system matters	18	9.8	96	52.2	23	12.5	43	23.4	04	2.2

Parameters	Responses									
	SA		A		N		D		SD	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Community members decide key issues on matters of the water supply system	25	13.6	119	64.7	30	16.3	06	3.3	04	2.2
Private sector management model										
In my opinion, the WSSB relies on the private sector to manage the water supply system	11	6.0	43	23.4	21	11.4	94	51.1	15	8.2
In my opinion, the private sector has capacity to manage the water supply system	29	15.8	61	33.2	32	17.4	53	28.8	09	4.9
In my opinion, the water operator has performed satisfactorily	14	7.6	31	16.8	26	14.1	94	51.1	19	10.3
In my opinion, the water operator makes key decisions in the management of the water supply system	05	2.7	44	23.9	24	13.0	92	50	19	10.3

Key: SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree

Source: Primary Data

Table 10 shows that the majority of respondents (59.2%) believed that community members had willingness to participate in management of the water supply system. The majority (37.5%) were neutral to the capacity of the community members to manage the water supply system. Majority of 52.2% believed that the community members always attended meetings pertaining to water supply issues, supported by the majority belief (64.7%) that the community members made the key decisions in the operation of the water supply systems.

Community participation was also viewed from the alternative facet of private sector participation in the management of the water supply system. Majority of the respondents (51.1%) disagreed to the assertion that the water supply system relied on private operators for its management though the majority (49%) believed that the private sector has capacity to manage the water supply systems. Majority of 51.1% of the respondents disagreed to the statement that the water operators had performed satisfactorily in the management of the water supply schemes, with 50.0% disagreeing to the fact that the private sector made the key decisions in the management of the systems.

The results show that the respondents generally had higher belief in the community members participating in the management of the water supply systems at the same time remaining skeptical on the performance of the private sector. The town clerk for Kakiri town council confirmed this position by unkind remarks about the private water operator:

"The town council reached an unfortunate decision to terminate services of the private water operator due to underperformance. The utility (electricity) bills were not paid regularly and the water supply system was constantly in arrears and we have not had water for over six months due to breakdowns. They (the operator) have failed to manage the system in

accordance with the performance contract"

Water supply board members in Kibibi town water supply system echoed similar concerns on the performance of the water operator. Interviews in Semuto and Nkonkonjeru came to the rescue of the private operators by stressing that the failures of the operators are usually due to technically deficient schemes handed over to the operators to run. The operator in Semuto clarified this saying:

"Semuto water supply system was designed to serve about 1,000 people and currently the town has a population of over 4,000 residents and hence we cannot provide good service to all the residents due to technical limitations"

The respondents' views generally showed mixed reactions on the performance of the private water operators in the small town water supply systems. The respondents believe that while the private sector has higher capacity to operate the water supply system, the exhibited performance was below expectation. There was, however, strong belief in the community participation in management of the small water supply systems. The respondents believed that community representatives had high willingness to participate in the system operations.

4.3.2 Research Objective Number Three: Organizational Control and Quality of Operation Services in Small Town Water Supply Systems

Only the water operator staff and the water supply board members were approached to present their views on the organizational control in the water supply systems. These were selected because they are regularly involved and informed about the daily operations of the water supply systems. The general consumers, on the other hand, were considered to have limited

information on the daily control systems in the water supply systems, since their contact with the office was not daily. Table 11 presents study findings on organizational control in the small town water supply systems visited.

Table 11: Frequencies on Organizational Control in Small Town Water Supply Systems

Parameters	**Responses**									
	SA		**A**		**N**		**D**		**SD**	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Belief systems										
The water supply system staff understand its vision and mission statements	03	7.0	13	30.2	14	32.6	07	16.3	06	14.0
The water supply system works to achieve the stated vision	13	30.2	6	14.0	19	44.2	02	4.7	3	7.0
The water supply system vision and mission are always displayed on official documents and notice boards	00	0.0	15	34.9	14	32.6	9.0	4.9	05	2.7
Boundary systems										
The water supply system staff understand the rules of conduct	07	3.8	14	32.6	15	34.9	05	11.6	02	4.7
The rules of conduct are communicated to all staff members	08	18.6	20	46.5	09	20.9	04	9.3	02	4.7

Parameters	Responses									
	SA		A		N		D		SD	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
The employees of the water supply system follow rules of conduct	14	32.6	15	34.9	9	20.9	5	2.7	00	0.0
Interactive systems										
There are formal meetings between staff for performance improvement	14	32.6	24	55.8	5	11.6	00	0.0	00	0.0
There are informal interactions among staff to improve performance	28	65.1	10	23.3	2	4.7	3	7.0	00	0.0
The water supply system staff regularly interact through telephone and email	03	7.0	06	14.0	30	16.3	04	11.6	00	0.0
Diagnostic systems										
The water supply system has operations schedules	06	14.0	04	9.3	02	4.7	17	39.5	14	32.6
The water supply system follows the schedules in operations	05	11.6	01	2.3	11	25.6	10	23.3	16	37.2
The water supply system prepares annual operations budgets	06	14.0	09	20.9	16	37.2	11	25.6	01	2.3

Parameters	Responses									
	SA		A		N		D		SD	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
The water supply system assess past year performance	00	0.0	01	2.3	08	18.6	32	74.4	2	4.7
The water supply system makes improvement plans based on past year assessments	02	4.7	06	14.0	08	18.6	21	48.8	06	14.0

Key: SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree

Source: Primary Data

Table 11 shows that majority of the respondents were neutral to the fact that staff understand and worked towards vision and mission statements reflected by 32.6% and 44.2% of the respondents respectively. A slight majority (34.9%), however, believed that the vision and mission statements were displayed on water supply system documents and notice boards. In relation to the boundary systems, understanding of the operation rules by staff was also averagely represented by 32.6% in agreement and 34.9% neutral to the statement on understanding of rules of conduct. The majority of 46.5% believed that the staff rules were communicated to the staff members and 34.9% (the majority) believed that staff followed the rules in their conduct.

Findings show that the majority of the respondents believed that there were interactive systems in the water supply systems reflected by 55.8% of the respondents agreeing that there

were formal meetings for performance improvement and even higher number (65.1%) consented that there were informal meetings discussing performance improvement. Informal interactions through other means like competitions, games and social outings aimed at performance improvement were, however, limited with the majority (30%) neutral to the statement.

Views on diagnostic control systems were rather mixed from the respondents, with the majority of 72.1% disagreeing to the assertion that water supply systems had operations schedules. Consistently, the majority (37.2%) did not believe that water operations were conducted in accordance with the operational schedules. A slight majority (37.2%) were neutral to the statement that the water supply system prepared annual operations budgets while a clear majority believed that there were no past year performance assessments to make improvements (74.4% in disagreement). Furthermore, 48.8% majority also disagreed to the fact that performance improvement plans were devised basing on past year performance.

The high percentages of respondents showing neutrality to the statements may have indicated some ambiguity of the tools on this aspect, or the clear lack of understanding of the aspect of organizational control by the respondents. The latter was assessed to be true since there was equally limited or vague documentary evidence of control systems in the water supply systems visited.

The results show that the level of organizational control in the small town water supply systems was rather low in belief, boundary and diagnostic systems but high in interactive control systems. This was indeed supported by the interviews and documentary reviews in which minutes for formal meetings were found in all water supply systems but documentary

evidence of vision and mission statements, staff rules and guidelines and operations schedules were missing. In the words of the water operator in Nakifuma:

"We have operations schedules, in a way that my staff know what to do and when to, but this is not in writing because my staff have become used to them and do not need reminders"

Other operators generally alluded to the fact that organizational control processes were generally not documented and were therefore implemented in a rather ad hoc manner. Only the mandatory control documentation like annual budgets and work plans were available because they had to be submitted to the Ministry of Water and Environment to be eligible to access the Conditional Grant.

4.3.4 Quality of Operation Services in Small Town Water Supply Systems

Respondents' views were also enlisted on the dependent variable, the quality of operation services in the small town water supply systems. This was measured on three indicators of tangibles (quality of water supplied and infrastructure), reliability and responsiveness to customers. Table 12 summarizes the results from the questionnaire showing the respondents' perception of the quality of operation services in their towns.

Table 12 indicates that the respondents were positive about the quality of tangibles with the majority of 128 respondents (69.6%) in agreement that the water supplied was of good quality, 58.7% in agreement with the color of the water and 51.1% in agreement with the smell of the water. There were, however, mixed views on the sufficiency of the water pressure with 33.2% in agreement and 31.0% in disagreement. A majority of 35.3% believed that the administrative water office area was welcoming while the majority of 36.4% did not believe

that the water supply physical infrastructure was in good state. Observations showed consistency of these results and Table 13 shows state of infrastructure at time of the study.

Table 12: Frequencies on Quality of Operation Services in Small Town Water Supply Systems

Parameters	**Responses**									
	SA		**A**		**N**		**D**		**SD**	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Tangibles (Potability of water supplied and state of infrastructure)										
The quality of water is always good	34	18.5	128	69.6	16	8.7	03	1.6	03	1.6
The color of water is always acceptable	49	26.6	108	58.7	13	7.1	11	6.0	03	1.6
The smell of the water is always acceptable	36	19.6	94	51.1	20	10.9	17	9.2	17	9.2
The water pressure is always acceptable	20	10.9	61	33.2	42	22.8	57	31.0	04	2.2
The customer service area at the water office is welcoming	20	10.9	65	35.3	29	15.8	32	17.4	38	20.7
The water supply system components (water faucets, tanks and pipes) are	15	8.2	54	29.3	36	19.6	67	36.4	12	6.5

Parameters	Responses									
	SA		A		N		D		SD	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
in good state										
Reliability										
Water is always flowing in the taps	02	1.1	14	7.6	27	14.7	114	62.2	27	14.7
Routine maintenance is always conducted on the water supply system	04	2.2	41	22.3	41	22.3	72	39.1	26	14.1
Cleaning of water facilities, pipes and installations is usually conducted	03	1.6	51	27.7	69	37.5	50	27.2	11	6.0
Minor breakdowns in the system are immediately repaired e.g service pipe burst (within 24hours)	14	7.6	58	31.5	33	17.9	65	35.3	14	7.6
Major breakdowns in the system are promptly addressed (within 3days)	10	5.4	50	27.2	51	27.7	52	28.3	21	11.4
Responsiveness to customers										
The water operator can easily be reached for complaint, payments and comments	17	9.2	100	54.3	27	14.7	36	19.6	04	2.2
The water operator promptly	31	16.8	74	40.2	32	17.4	39	21.2	08	4.3

Parameters	Responses									
	SA		A		N		D		SD	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
responds to customer complaints										
The water operator attends to the individual customers	09	4.9	79	42.9	62	33.7	26	14.1	08	4.3
The water operator staff are welcoming to customers	22	12.0	91	49.5	35	19.0	32	17.4	04	2.2

Key: SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree

Source: Primary Data

Table 13 shows that the state of the physical infrastructure in the small town water supply systems visited is generally in fair maintenance state. There was a general problem in maintaining the catchment areas in the vicinity of the water sources, which was explained as not being in the operators' contractual obligations. Office equipment was also generally lacking or in a poor state attributed to insufficient funds to the water supply systems.

Table 12 shows that the reliability of service presented the greatest challenge to the quality of service with 62.2% of the respondents in disagreement with the statement that the water is always flowing. The majority (39.2%) disagreed that routine maintenance was always conducted supported by 37.5% neutral to the statement that cleaning of the water supply components was always done. 35.3% majority disagreed to the fact that minor repairs were promptly conducted and 28.3% disagreed that major components were promptly repaired.

Responsiveness to customers was assessed and Table 12 shows that the majority 54.3% believed that the water operator was easily reached for water related matters, 40.2% believed that the water operator promptly responded to their complaints, 42.9% believed that the operators responded to individual concerns while 49.5% majority believed that the water operator staff were welcoming to customers.

The quality of water supply services can therefore be described as average considering that the quality of the tangibles was average and so was the customer responsiveness to customers. Reliability of service, however, was a challenge across all the towns under study. The interview results reflect the situation as testified to by a respondent from Kibibi:

"We have not had water supply for the last four months and nothing has been done to rectify the situation since the pump broke down. We are also Ugandans, deserving a reliable supply. Remember water is life and there cannot be life in Kibibi without water supply"

Another respondent from Nkokonjeru added that:

"Last month the transformer was vandalized and it took three weeks without a drop of water from the water supply system. We had to rely on unsafe sources of water, which were even more expensive"

Reliability, therefore, was considered an important aspect of the quality of service and underperformance on this aspect highly discredited the quality of operation services despite other positive aspects.

Table 13: State of Infrastructure in the Study Area Water Supply Systems

Infrastructure	Components	State of infrastructure																								
		Nakifuma					Kakiri					Kibibi					Nkonkonjeru					Semuto				
		5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1	5	4	3	2	1
Water source	Fence			x				x					x							X					x	
	Pipes and fittings			x				x					x					x				x				
	Protection area				x					x					X				x					x		
	General cleanliness				x						x					x			x					x		
Reservoir tank	Pipes and fittings			x			x					x								X					x	
	Structural fitness			x				x					x								x					x
	General cleanliness				x					x					X					X					x	
Town water office	Customer service area	x								x					X			x					x			
	Office equipment					x				x					X					X						x
	Structural fitness			x					x					x				x					x			
	General cleanliness		x							x					X					X				x		
Kiosks/Water points	Pipes and fittings				x				x					x				x					x			
	Structural fitness				x				x					x				x					x			
	General cleanliness					x				x					X						x				x	

1 = Very bad, 2 = Bad, 3 = Fair, 4 = Good, 5 = Very Good

Source: Primary Data

4.4 Relationships of Variables

Correlation analyses were conducted to establish the relationship between the variables in the study. This was performed objective by objective and also included testing of the strength and magnitude of the relationships using linear regression analysis as discussed further on.

4.4.1 Correlation Analysis

The Pearson correlation coefficient was used in this study to establish existence of a relationship between the independent variables of resource availability, community participation, organizational control and the dependent variable of quality of operation services in small town water supply systems. Table 14 shows the correlation results obtained.

Table 14 suggests that there was a very weak and insignificant negative correlation between resources availability and quality of operation services in the small town water supply systems ($r = -0.063$, $p>0.05$). The results therefore imply that the relationship between resources availability and the quality of operation services in small town water supply systems is minimal, which implies that increase of resources would not have significant improvement in the quality of operation services.

The results further showed that there was a statistically positive and significant correlation between community participation and quality of operation services in small town water supply systems ($r = 0.523$; $p < 0.01$). The results therefore imply that increase in community participation would have a significant improvement in the quality of operation services in the small town water supply systems.

Table 14: Pearson Correlation Coefficient Results

		Factor 1: Resources Availability	Factor 2: Community Participation	Factor 3: Organizational Control	DV: Quality of Operation Services
Factor 1: Resources Availability	Pearson Correlation	1	.159*	.070	-.063
	Sig. (2-tailed)		.031	.655	.394
	N	184	184	43	184
Factor 2: Community Participation	Pearson Correlation	.159*	1	.178	.523**
	Sig. (2-tailed)	.031		.252	.000
	N	184	184	43	184
Factor 3: Organizational Control	Pearson Correlation	.070	.178	1	.200
	Sig. (2-tailed)	.655	.252		.198
	N	43	43	43	43
DV: Quality of Operation Services	Pearson Correlation	-.063	.523**	.200	1
	Sig. (2-tailed)	.394	.000	.198	
	N	184	184	43	184

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Primary Data

The results further suggest that there was an insignificant positive correlation between organizational control and quality of operation services in the small town water supply

systems ($r = 0.200$, $p>0.05$). The results imply that the relationship between organizational control and quality of operation services is positive but weak. Improvement of organizational control would have a positive, but dismal improvement in quality of operation services.

The correlation analyses were then supplemented by linear regression model analysis to establish the strengths of association as described further on.

4.4.2 Linear Regression Analysis

A linear regression model using least square estimation method was used to assess the strength of the relationship between the independent factors (resources availability, community participation and organizational control) as they affect the quality of operation services in the small town water supply systems in the study area. Table 15 shows the regression analysis results.

The results in Table 15 indicate that the independent factor of resource availability only accounts for 0.1% of the total variation in quality of operation services (adjusted $R^2 = -0.001$). The results further indicate that a unit increase in available resources would lead to a decrease in quality of operation services in small town water supply systems by 0.063 ($\beta = -0.063$). The F-statistics, however, show that these findings are not statistically significant, with the significance level well above 0.05 ($F = 0.730$, $p = 0.394$).

The hypothesis that resource availability significantly affects the quality of operation services in small town water supply systems is therefore rejected.

Table 15: Regression Coefficient Results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
(Constant)		51.89	4.484		11.573	0.000
Factor 1: Resources Availability		-0.17	0.198	-0.063	-0.854	0.394
Model Summary	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	
	0.063	0.004	-0.001	6.502	F = 0.730	P = 0.394
(Constant)		19.892	3.431		5.797	0.000
Factor 2: Community Participation		1.048	0.127	0.523	8.275	0.000
Model Summary	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	
	0.523	0.273	0.269	5.554	F = 68.468	P = 0.000
(Constant)		24.596	16.039		1.534	0.133
Factor 3: Organizational Control		0.418	0.319	0.2	1.307	0.198
Model Summary	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	
	0.2	0.040	0.017	8.973	F =1.709	P = 0.198
Dependent Variable: Quality of Operation Services						

Source: Primary Data

The findings further show that community participation explains as much as 26% of the variation in quality of operation services in small town water supply systems as indicated by

the coefficient of determination of $R^2 = 0.273$ and an adjusted $R^2 = 0.260$. The results suggest that a unit increase in community participation will lead to an increase of 0.523 in the quality of operation services in the small town water supply systems ($\beta = 0.523$). The findings are statistically significant, with the significance level well below 0.05 ($F = 68.468$, $p < 0.01$).

The hypothesis that community participation significantly affects the quality of operation services in small town water supply systems is therefore upheld.

The findings also suggest that organizational control predicts only 1.7% of the variation in quality of operation services in small town water supply systems as indicated by the adjusted coefficient of determination of $R^2 = 0.017$. The results suggest that a unit increase in organizational control will lead to an increase of 0.20 in the quality of operation services in the small town water supply systems ($\beta = 0.200$). The findings, however, are not statistically significant, with the significance level above 0.05 ($F = 1.709$, $p = 0.198$).

The hypothesis that organizational control significantly affects the quality of operation services in small town water supply systems is therefore rejected.

The findings to the study are summarized and comprehensively discussed with respect to operation services in small town water supply systems. This discussion then forms the basis for drawing conclusions and recommendations as presented in chapter five.

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the study findings, discusses the results, draws conclusions from the study and provides recommendations. The summary recaps the the key findings of the study. Discussions of the key findings are then presented objective by objective and so are the conclusions and recommendation from the study.

5.1 Summary of Study Findings

The study findings are summarized in line with the specific objectives and accompanying research questions of the study, which were:

i. To assess the extent to which resource availability affects the quality of operation services in small town water supply systems in central Uganda.

ii. To assess the effect of community participation on the quality of operation services in small town water supply systems in central Uganda.

iii. To assess the effect of organizational control on the quality of operation services in small town water supply systems in central Uganda.

The study findings revealed that there was a very weak and insignificant negative correlation relationship between resource availability and quality of operation services in the small town water supply systems ($r = -0.063$, $p>0.05$). This showed that increase in resources would have

a mild negative intonation on the quality of operation services in the small town water supply systems. It was generally revealed that the level of resources available to the water supply systems was low, both internally generated resources and external resources, which only comprised of conditional grants. Despite the low resources in all the towns under study, the quality of operation services in the small towns varied.

Community participation had a positive and significant correlation with quality of operation services ($r = 0.523$; $p < 0.01$) indicating that increased community participation in the management of the small town water supply systems led to increased quality of operation services provided. The level of community participation was noted to be high and well appreciated by the respondents. Limited community participation lead to use of the private sector in operation of the water supply systems, but the respondents generally expressed mixed feelings on the performance of the water supply systems under private water operators. It generally emerged that the customers were less than satisfied with the quality of operation services offered by the private water operators.

The study findings further revealed a weak and statistically insignificant positive correlation between organizational control and quality of operation services in the small town water supply systems ($r = 0.200$, $p>0.05$). The concept of organizational control was not well understood and there was generally limited documentation available in the town water supply systems to the effect. Significant results indicated neutrality to research questions, which further cast doubt on the respondents' appreciation of the concept. However, bureaucratic control systems (belief, boundary and diagnostic control systems) were, generally less performed than the interactive control systems.

5.3 Discussion of Findings

5.3.1 Resources Availability and Quality of Operation Services in Small Town Water Supply Systems

The study findings seemed to suggest that the level of internal resources to the water supply systems was low. While there was noted high willingness and ability to pay, the collections in the water supply systems were noted to be low. Low banking culture was noted as one of the main reasons why collection efficiencies were low, since the customers were required to deposit the dues on bank accounts. In a country where over 62% of the population does not have access to any type of banking services (Fuchs and Ruparel, 2009), this is not surprising.

External resources to the water supply systems were also noted to be generally too low to meet the requirements. The form of external resources only constituted Central Government conditional grants, which were addressed to special interventions especially increase of connections. Access to bank/micro-finance loaning was curtailed by high risk of lending to this sector and limited capacity to prove creditworthiness by these water supply systems. Robinson (2003) supports this finding asserting that the undefined legal status of the water supply systems and management committees complicates the loan acquisition prospects for small water supply systems.

The study findings showed a very weak and insignificant negative correlation relationship between resource availability and quality of operation services in the small town water supply systems. Gulanyi (2001) confirms this finding, asserting that sometimes external resources to the water supply systems are misconceived and mismanaged leading to further deterioration of the quality of service delivery. In support of this were prevalent views which showed that

the increased conditional grants to the water supply systems were only targeted at system expansion without addressing the water (sources) supply and other factors. This led to a high number of customers, at the same level of water supply, hence reducing reliability of service.

The Resource Mobilization theory further concurs with the findings, pointing out that accumulation of resources per se without supportive mechanisms of control and leadership will not propel the organization to the intended goals (Zeithaml, Parasuraman & Berry, 1990). In a related study in Kenya, the International Finance Corporation (2011) established that small scale water supply systems can benefit from additional resources but only if these resources are tagged to overall improvement in revenues and quality of service. The conditionality of the external resources availed to small water supply systems in the study area was therefore seen as one of the reasons why there was no evident improvement in operation service quality.

5.3.2 Community Participation and Quality of Operation Services in Small Town Water Supply Systems

As communities transition from rural to urban setting, community involvement in management of social services like water supply reduces (Robinson, 2003), but the finding of the study show that this may negatively affect the quality of service provision. The study revealed a strong positive correlation between community participation and quality of operation services in the small town water supply systems. The proponents of this view hold that water supply systems in small towns in the developing world can still greatly benefit from active community involvement because of their relatively small size (Ahmed & Rahman, 2003; Robinson, 2003 and van Ast, Rosa and Santbergen, 2008).

The results from the study were indeed able to show that active community participation monitors the performance of the water supply systems and calls for increased accountability in service delivery, which improves the quality of service delivery. Rop (2011) acknowledges the importance of community call for accountability in provision of water services and highlights approaches that have been fostered in Kenyan peri-urban water supply systems for promoting voice and accountability among the customers of urban water supply systems.

Okot (2011) reported similar results in the study of the influence of the customers' participation on quality of service delivery conducted in delivery of private medical practice. She attributed the improvement of service quality to customer participation through evaluation and reviews and call for improvements to meet the customers' demands.

These views were strengthened by the general indication that the quality of operation service provided by the private sector was below customer expectation and communities believed that they could do better. Skeptic tendencies from Hall, Lobina and de la Motte (2005) on performance of the private sector in management of water supply systems seem to resonate high in the study findings. It also emerged, though, that most of the private sector failings were primarily due to system technical failures rather than poor management practices.

5.3.3 Organizational Control and Quality of Operation Services in Small Town Water Supply Systems

The results of the study tend to agree with extensive literature reviewed that organizational control is essential for attainment of organizational objectives including quality of service delivery. Nieminen and Lehtonen (2008) observed that due to the fact that organizational control consists of both formal and informal dimensions, it is difficult to obtain empirical

convergent study results. They, however, point out that there is strong empirical evidence on the improvement of service quality and bureaucratic control mechanisms because of availability of study information. Narayana and Rao (1987) allude to the fact that service quality is indeed more complicated to control in comparison to product quality. Appreciation of control to improve overall quality in organizations is indeed the genesis of most control tools like total quality management, quality circles and six sigma, among others.

Liesegang, Kohler and Schaad (2006) reported improvement of quality of outputs in the software engineering arena by moving ahead of traditional administrative controls, which only emphasized the structural composition of the organization and the formal policies and procedures within the firm. The results of the study affirm that combined administrative (belief and boundary systems) and non-traditional approaches including interactive and diagnostic systems may have a positive impact on the quality of service delivery. This approach is even more important in such small organizations where the study showed that there is limited formal documentation on organizational control practices and tools.

5.4 Conclusions

5.4.1 Resources Availability and Quality of Operation Services in Small Town Water Supply Systems

The study revealed that internal and external resources to the small town water supply systems were low. Findings also suggested that there was a mild negative insignificant correlation between resource availability and quality of operation services in the small town water supply systems. The study therefore concludes that resource availability does not significantly affect the quality of operation services in small town water supply systems.

5.4.2 Community Participation and Quality of Operation Services in Small Town Water Supply Systems

The study findings showed a significant positive correlation between community participation and quality of operation service in small town water supply systems. The findings suggest that increased community participation in the operation of small town water supply systems would lead to improvement of service quality. The study therefore concludes that community participation significantly affects the quality of operation services in small town water supply systems.

5.4.3 Organizational Control and Quality of Operation Services in Small Town Water Supply Systems

The study findings revealed a positive but insignificant correlation between organizational control and the quality of operation services in small town water supply systems. The findings suggest that improved organizational control may have a positive but insignificant improvement in the quality of operation services in the small town water supply systems. The study therefore concludes that organizational control does not significantly affect the quality of operation services in small town water supply systems.

5.5 Recommendations

5.5.1 Resources Availability and Quality of Operation Services in Small Town Water Supply Systems

- The Ministry of Water and Environment and District Local Governments should educate the small town water supply systems on creative methods of improving revenue collection that are suitable in the small towns. These avenues may include

payment through mobile phone services or on-site payments through pre-paid systems.

- The Ministry of Water and Environment also should assist water supply systems in soliciting for external resources like grants and commercial loans to augment their resources. Improving the creditworthiness of the water supply systems may include helping the systems with overall business planning and documentation.

- The Ministry of Water and Environment could also partner with financial institutions like banks and micro-finance institutions to introduce specific loan products that may be accessible to the water systems, guaranteed by the Government.

- The Government of Uganda should review the policy of Conditional Grants to the water supply systems, which targets specific interventions like energy, extension and system specific aspects. The Conditional Grant should be availed responding to an identified need in the water supply system, contributing to the broader goal of ensuring sustained quality of operation services.

5.5.2 Community Participation and Quality of Operation Services in Small Town Water Supply Systems

- The Ministry of Water and Environment needs to conduct capacity building to the private water operators to improve their operation services. The private water operators also need to be assisted to develop effective communication strategies so that the customers are informed well in time on system shortcomings in order to reduce blame to the operators. Such would include radio spots or community announcements on repair and technical failure scenarios.

- The Water Authorities in the small towns should consider motivation approaches for water supply board members in order to sustain their interest in managing the water supply system. Such motivation approaches may include recognition of the members, trainings and monetary facilitation where possible to undertake their obligations.

5.5.3 Organizational Control and Quality of Operation Services in Small Town Water Supply Systems

- The Ministry of Water and Environment, the Water Authorities Division in particular, should assist the small town water supply systems to develop formal control systems like mission and vision statements, performance regulations, schedules and budgeting tools, among others.

- The Ministry of Water and Environment needs to further educate the water supply system operators on the role of informal control systems like interactive meetings on performance review, informal discussions and communications as they pertain to improving organization performance. This could be done through training and exchange/benchmarking visits between different water operators.

5.6 Limitations of the Study

This study was conducted in only five small town water supply systems in the Central region of Uganda. The study results may therefore be applied with caution to other regions of the country since the selection of the central region was purposive. The central region was chosen because it had the highest level of urbanization in the country, being located in the vicinity of the Ugandan capital.

The researcher is a staff of the Ministry of Water and Environment, who is actively involved in monitoring of activities of the small town water supply systems in Uganda. There was therefore a likelihood of respondents providing biased information to show an improved picture of performance. This was however minimized by using several data collection methods and use of research assistants.

The study considered a limited sample of participants for the study of organizational control. This was necessary to ensure that only participants with adequate knowledge of the operation services were considered. This may have affected the significance of the results.

5.7 Contributions of the Study

The study contributed valuable information to the general body of knowledge in management of small scale water supply systems. The study applied the Resource Mobilization theory, the Simons Four Levers of Control and the SERQUAL model in explaining how the organizational factors of resources availability, community participation and organizational control affect the quality of operation services.

The study assessed the contribution of internal and external resources available to the small water supply systems to the overall improvement of service quality in the areas. It came to light that these resources do not necessarily translate into improved service quality because they are focused on stringent aspects that do not translate into improved service quality to the customers.

The study provided a snap shot on the people's perception on community participation and private sector management in the small town water supply systems. Though highly considered

for rural settings, community participation is also instrumental in ensuring improved quality service delivery in the small towns. The concept of private sector managed revealed gaps to provision of quality services, which will need to be addressed in a bid to promote the approach further.

The study further provided insight on organizational control, a management concept that has received limited attention to date, as it affects quality of service delivery. The study highlighted the literature gaps and the limited understanding of the concept in small organizations, but showed that organizational control has a potential to contribute to improved organizational performance in quality of service provision.

5.8 Areas for Further Research

This study was conducted in only five selected small town water supply systems in central Uganda where small towns were defined with population range of 500 – 15,000. A number of other water supply systems exist in the region and the country at large with populations outside this range but are managed and operated in a similar framework of small towns. A more comprehensive study covering wider geographical areas and including a higher number of small town water supply systems is recommended to validate findings from this study.

There is particularly limited literature on organizational control and more so on small organizations like the water supply systems under study. The study has shown that there is chance for positive improvement in quality of operation services in small town water supply systems with improved organizational control. It is also to be appreciated that the study findings were based on views from only 43 participants who had adequate knowledge of the

daily operations of the water supply systems under the study. Increasing the number of respondents to include more technical external respondents in the water sector and across other regions of the country may yield more statistically significant results.

Other non-organizational factors like technology and climatic changes (leading to diminished water sources potential) have been noted to influence the quality of operation services in small town water supply systems but were beyond the scope of this study. It is therefore recommended that they could be studied to ascertain their extent of influence on the quality of operation services in small town water supply systems.

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APPENDICES

Appendix 1: Documentation review check list

Appendix 2: Observation check list

Appendix 3: Questionnaire

Appendix 4: Interview guide

Appendix 5: Authorization letter from UMI

Checklist No.	
Town	
Research Assistant	

APPENDIX 1

DOCUMENTATION REVIEW CHECK LIST

BASIC SYSTEM INFORMATION

1. Year of construction:
2. Type of water supply system (Gravity flow or pumping system):
3. System operator:
4. Duration of operator in the town water supply system:
5. Experience of operator in operation of town water supply systems:
6. No. of operator s staff:

Management staff	Engineers/ technicians staff	Mobilisation/ Commercial staff	Support staff

CENTRAL GOVERNMENT SOURCE

7. Review sector performance reports
8. Review submitted town water supply business plans
9. Policy documents in urban water supply

TOWN WATER SUPPLY OFFICE SOURCE

10. Customer resource base
11. Conditional grant information: Amount and expenditure items
12. Annual revenue and expenditure reports
13. Water quality test reports

INTERNENT, LIBRARY, NEWSPAPERS SOURCES

Checklist No.	
Town	
Research Assistant	

14. General literature on operation of water supply systems
15. Literature on quality of service delivery
16. Literature on resource mobilization, water services management models and organizational control

Checklist No.	
Town	
Research Assistant	

APPENDIX 2

OBSERVATION CHECKLIST

STATE OF INFRASTRUCTURE

On a scale of 1 – 5 (Very bad to Very Good), please tick the observed state of repair of the infrastructure in the town water supply system in the table below.

Infrastructure	**Components**	**State of infrastructure**				
		Very Good (5)	Good (4)	Fair (3)	Bad (2)	Very bad (1)
Water source	Fence					
	Pipes and fittings					
	Protection area					
	General cleanliness					
Reservoir tank	Pipes and fittings					
	Structural fitness					
	General cleanliness					
Town water office	Customer service area					
	Office equipment (Computers, printers etc)					
	Structural fitness					
	General cleanliness					
Kiosks/Water points	Pipes and fittings					
	Structural fitness					
	General cleanliness					

Questionnaire No.	
Town	
Research Assistant	

APPENDIX 3

USERS QUESTIONNAIRE

Dear Participant,

This questionnaire is designed to study organizational factors affecting quality of operation services in water supply stems in small towns, like your system. The information collected will help to analyse the quality of operation service in small town water supply systems. The results of the study will contribute to development of strategies for improving quality of operation services in small towns of Uganda. You have been identified as a key stakeholder in the town water supply system with a good understanding of the operation of the system. I kindly request you to respond to the questions frankly and honestly. There is no need to disclose your name.

Your responses will be kept strictly confidential. Only the research team will have access to the information you give. Please spare about 15 minutes of your time to respond to the questions in the questionnaire according to the provided instructions. A summary of the results will be sent to you after the data are analyzed.

Thank you very much for your time and cooperation.

FELIX TWINOMUCUNGUZI

Researcher

SECTION A: BACKGROUND

Please tick the information applicable to the you.

No	QUESTION	ANSWER				
		1	**2**	**3**	**4**	**5**
1	What is your age in years?	Under 20	20-35	36-50	51-65	Over 65
2	What is your gender?	Female	Male			
3	What is your highest completed level of education?	None	Primary	Ordinary level	Advanced Level	College & above
4	What is your occupation?	Peasant	Commercial Farmer	Business	Salary Earner	Casual Labourer

SECTION B: ORGANIZATIONAL FACTORS

On a scale of 1 – 5 (1-Strongly Disagree, 2-Disagree, 3-Neutral, 4- Agree, 5-Strongly Agree); please tick your opinion on the following statements as applies to your town water supply system.

No.	ORGANIZATIONAL FACTOR	5	4	3	2	1
B.1	**RESOURCES AVAILABILITY**					
B.1.1	**Internal resources**					
1	In my opinion, the customers are willing to pay their water bills	5	4	3	2	1
2	In my opinion, the customers have the ability to pay their water bills	5	4	3	2	1
3	In my opinion, all the customers promptly receive bills for water consumed	5	4	3	2	1
4	In my opinion, the operator collects all the revenue due to the water supply system	5	4	3	2	1

No.	ORGANIZATIONAL FACTOR	5	4	3	2	1
B.1.2	**External resources**					
5	In my opinion, the water supply system obtains grants from central government (MWE) to run its operations	5	4	3	2	1
6	In my opinion, the water supply system obtains grants from the local government (District or Town council) to run its operations	5	4	3	2	1
7	In my opinion, the water supply system solicits for funds from NGOs/Development partners to run the system	5	4	3	2	1
8	In my opinion, the water supply system obtains commercial loans to run operations	5	4	3	2	1
B.2	**COMMUNITY PARTICIPATION**					
B.2.1	**Community management model**					
9	Community members are willing to participate in the management of the water supply system	5	4	3	2	1
10	Community members have capacity to manage the water supply system	5	4	3	2	1
11	Community members attend meetings to discuss water supply system matters	5	4	3	2	1
12	Community members decide key issues on matters of the water supply system	5	4	3	2	1
B.2.2	**Private sector management model**					
13	In my opinion, the WSSB relies on the private sector to manage the water supply system	5	4	3	2	1
14	In my opinion, the private sector has capacity to manage the water supply system	5	4	3	2	1
15	In my opinion, the water operator has performed satisfactorily	5	4	3	2	1
16	In my opinion, the water operator makes the key decisions for the management of the water supply system	5	4	3	2	1
B.3	**ORGANIZATIONAL CONTROL** ***(Only Water Operator Staff and Water Board Members)***					
B.3.1	**Belief systems**					
17	The water supply system staff understand its vision and mission statements	5	4	3	2	1
18	The water supply system works to achieve the stated vision	5	4	3	2	1
19	The water supply system vision and mission are always displayed on official documents and notice boards	5	4	3	2	1

No.	ORGANIZATIONAL FACTOR	5	4	3	2	1
B.3.2	**Boundary systems**					
20	The water supply system staff understand the rules of conduct	5	4	3	2	1
21	The rules of conduct are communicated to all staff members	5	4	3	2	1
22	The employees of the water supply system follow the rules of conduct in business	5	4	3	2	1
B.3.3	**Interactive systems**					
23	There are formal meetings between staff for performance improvement	5	4	3	2	1
24	There are informal interactions among staff to improve performance	5	4	3	2	1
25	The water supply system staff regularly interact through telephone and email	5	4	3	2	1
B.3.4	**Diagnostic systems**					
26	The water supply system has operations schedules	5	4	3	2	1
27	The water supply system follows the schedules in operations	5	4	3	2	1
28	The water supply system prepares annual operations budgets	5	4	3	2	1
29	The water supply system assess past year performance	5	4	3	2	1
30	The water supply system makes improvement plans based on past year assessments	5	4	3	2	1

SECTION C: QUALITY OF OPERATION SERVICES

On a scale of 1 – 5 (1-Strongly Disagree, 2-Disagree, 3-Neutral, 4- Agree, 5-Strongly Agree); please tick your opinion on the following statements as applies to your town water supply system.

No.	QUALITY OF OPERATION SERVICES	5	4	3	2	1
C.1	**Tangibles (Potability of water supplied and state of infrastructure)**					
1	The quality of water is always good	5	4	3	2	1
2	The color of water is always acceptable	5	4	3	2	1

No.	QUALITY OF OPERATION SERVICES	5	4	3	2	1
3	The smell of the water is always acceptable	5	4	3	2	1
4	The water pressure is always acceptable	5	4	3	2	1
5	The customer service area at the water office is welcoming	5	4	3	2	1
6	The water supply system components (water faucets, tanks and pipes) are in good state	5	4	3	2	1
C.2	**Reliability**					
7	Water is always flowing in the taps	5	4	3	2	1
8	Routine maintenance is always conducted on the water supply system	5	4	3	2	1
9	Cleaning of water facilities, pipes and installations is usually conducted	5	4	3	2	1
10	Minor breakdowns in the system are immediately repaired e.g service pipe burst (within 24hours)	5	4	3	2	1
11	Major breakdowns in the system are promptly addressed (within 3days)	5	4	3	2	1
C.3	**Responsiveness to customers**					
12	The water operator can easily be reached for complaint, payments and comments	5	4	3	2	1
13	The water operator promptly responds to customer complaints	5	4	3	2	1
14	The water operator attends to the individual customers	5	4	3	2	1
15	The water operator staff are welcoming to customers	5	4	3	2	1

Any further comments:

.....

.....

Thank you for your participation!

Interview No.	
Town	
Research Assistant	

APPENDIX 4

INTERVIEW GUIDE FOR KEY INFORMANTS

Dear Participant,

This interview is intended to study organizational factors affecting quality of operation services of water supply stems in small towns of central Uganda. The information collected will help to analyse the quality of operation services in small town water supply systems. The results of the study will contribute to development of strategies for improving quality of operation services in small towns of Uganda. I kindly request you to respond to the questions frankly and honestly. There is no need to disclose your name.

Your responses will be kept strictly confidential. Only the research team will have access to the information you give. Please spare about 15 minutes of your time to respond to the questions administered by the research assistant, who will record the information. A summary of the results will be sent to you after the data are analyzed.

Thank you very much for your time and cooperation.

FELIX TWINOMUCUNGUZI

Researcher

SECTION A: RESPONDENT BACKGROUND INFORMATION

Please tick the information applicable to the respondent.

No	QUESTION	ANSWER				
		1	**2**	**3**	**4**	**5**
1	What is your age in years?	Under 20	20-35	36-50	51-65	Over 65
2	What is your gender?	Female	Male			
3	What is your highest completed level of education?	None	Primary	Ordinary level	Advanced Level	College & above
4	What is your occupation?	Peasant	Commercial Farmer	Business	Salary Earner	Casual Labourer

SECTION B: RESOURCES AVAILABILITY

1. What is the average monthly revenue for the town water supply system?

   ……

   ……

2. What is the average monthly expenditure for the town water supply system?

   ……

   ……

3. Are the customers willing to meet their bills for the consumed water?

   ……

   ……

4. Do you benefit from the Government Conditional Grant? If YES, please give average

annual allocations.

……

……

5. Does the system obtain any other form of external funding e.g town council budget, loans/grants to finance operations?

……

……

SECTION C: COMMUNITY PARTICIPATION

6. Do you think community members are willing to participate in the management of the water supply system?

……

7. Do you think the community members have the capacity to manage the water supply system?

……

8. Do you think private sector should be involved in management of the water supply systems? If YES, to what extent?

……

……

9. Are you satisfied with the current operator of your water supply system? Give reasons.

……

……

SECTION D: ORGANIZATIONAL CONTROL

10. Does the town water supply system have vision, mission statements?

……

……

11. Are there rules or conduct of conduct for employees in execution of duties? Give examples please.

……

……

12. Do you have regular performance discussions/interactions with supervisors?

……

……

13. Does the town water supply system use activity schedules?

……

……

SECTION C: QUALITY OF OPERATION SERVICES

14. Are you satisfied with the quality of water supplied? If, NO, please specify.

……

……

15. How many hours a day (in 24 hours) do you have water running in your taps?

……

……

16. Do employees at the town water supply system listen to the customers concerns and respond promptly?

……

……

Thank you for your participation!

APPENDIX 5

FIELD RESEARCH AUTHORIZATION

UGANDA MANAGEMENT INSTITUTE

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

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

Your Ref:

Our Ref: G/35

18 May 2011

Mr. Felix Twinomucunguzi
10/MMSPPM/21/073

Dear Mr. Twinomucunguzi,

FIELD RESEARCH

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

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

Wishing you the best in the field.

Yours sincerely,

Gerald Karyeija (PhD)
AG. HEAD, HIGHER DEGREES DEPARTMENT

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

Your Ref:

Our Ref: G/35

18 May 2011

TO WHOM IT MAY CONCERN

MASTERS IN MANAGEMENT STUDIES DEGREE RESEARCH

Mr. Felix Twinomucunguzi is a student of the Masters Degree in Management Studies of Uganda Management Institute 21st Intake 2010/2011 specializing in Project Planning and Management, **Reg. Number 10/MMSPPM/21/073.**

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

His Research Topic is: ***"Organisational Factors Affecting the Quality of operation Services in Small Town Water Supply Systems in Central Uganda"***

Gerald Karyeija (PhD)
AG. HEAD, HIGHER DEGREES DEPARTMENT