

**PROJECT MANAGEMENT INFORMATION SYSTEMS AND PROJECT
PERFORMANCE: A CASE OF NWSC- KABALE**

BY

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MAY, 2023

DECLARATION

I, **ABIGABA JACKSON**, declare that the work presented in this Report is my original work which has never been presented to any institution of higher learning for any academic award.

Signature..... Date.....

ABIGABA JACKSON (2019/A/PPM/004/W)

APPROVAL

This Research Report on “*Project management information systems attributes and project performance: A Case Study of NWSC Kabale Area*” has been successfully written by ABIGABA JACKSON and I therefore approve and forward it to Kabale University.

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DEDICATION

I dedicate this thesis to my wife GLORIA NDIBAZZA who has been so supportive to me in all ways through my studies.

Secondly, to my supervisor who guided me well along to the completion of this study report.

Finally, to my fellow Ugandans who work with National Water and sewage co-operation.

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I would like to express my deepest appreciation to all those who supported the possibility of completing this report. I owe a special debt of gratitude to my supervisors Prof. CALEB TAMWESIGIRE and Associate Prof BUSINGE FELIX BUSINGE ABWOOLI whose insistence on quality, stimulating suggestions and relentless encouragement helped me to complete this thesis in a manner that completed me.

Furthermore, I would also like to acknowledge with much appreciation the non-academic, but crucial role played by Management and Staff National Water Sewage Cooperation Kabale, who encouraged me to finish this thesis.

LIST OF ABBREVIATIONS

ICT	Information Communication Technology
IS	Information Systems
IT	Information Technology
NWSC	National Water and Sewage Corporation
PMIS	Project Management Information Systems
POS	Point of Sales
UBOS	Uganda Bureau of Statistics

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ABSTRACT

This study examined the effect of project management information systems on project performance in Uganda, a case of National Water and Sewerage Corporation, Kabale Branch. This study was based on three objectives namely: the effect PMIS software on the performance of NWSC- Kabale projects; to assess the quality of information generated by PMIS and performance of NWSC- Kabale projects; to investigate the challenges of Project Management Information System towards user satisfaction and performance of NWSC- Kabale projects, and to examine the contributions of Project Management Frequency tables were employed to describe the data since descriptive analysis required presentation of a single variable and its characteristics. A Pearson correlation matrix was used to determine the correlations between the predictor factors and the dependent variable at the bivariate level. To fit the data, linear regression models were employed. According to research results from the regression models, the project performance at NWSC Kabale projects, is positively impacted by PMIS where PMIS software on the performance of NWSC- Kabale projects($R=0.971$), challenges of Project Management Information System on project performance with ($R =662$) and Contributions of Project Management Information System, on project performance ($R=656$) .The fundamental finding of this study was that, to the bigger extent, PMIS affects project performance at NWSC Kabale-Projects Therefore, this study recommends that, PMIS should be concentrated on if the NWSC Kabale- Projects are perform well.

CHAPTER ONE

BACKGROUND OF THE STUDY

1.0. Introduction

This study examined the effect of project management information systems on project performance in Uganda a case of National Water and Sewerage Corporation (NWSC) - Kabale Branch. Project performance was the dependent variable, and the project management information system was the independent variable. The backdrop of the study, the problem statement, the purpose and objectives of the investigation, the research questions and hypotheses, the conceptual framework, the importance of the study, the scope of the study, and definitions of operational terminology are all covered in this chapter.

1.1. Background of the study

1.1.1. Historical background

Projects have existed throughout the world since the beginning of time (Kerzner, 2022). Since the beginning of human habitation on earth, project execution has been used to gauge the success of projects (Turyasingura et al., 2023). The Tower of Babel was the first project, marking the start of modern project planning and administration (Levy, 2018). Before 1900, architects and engineers employed as master builders were in charge of projects. A skilled builder with construction experience planned and oversaw the project, which ultimately led to roles as an engineering project contractor (Chui, 2010). The pioneers of project management in the 20th century were Henri Fayol (1841–1925) and Henry Gantt (1861–1919). Planning, organizing, commanding, coordinating, and regulating are the five management functions that Henri Fayol identified as the building blocks the manager might use to gauge the success of a project (Tam, 2020). Projects are created to address anticipated uncertainties, but for their performance to be realized, they must first undergo adequate planning (Turyasingura et al, 2022). Even though projects can be difficult, many have been finished successfully despite the risks and difficulties that could have caused a project to fail. Brilliant examples are the Great Wall of China. These engineers, who were now project managers, had to carefully consider all the project's procedures, beginning with the project's inception, planning, implementation, and monitoring of progress (Tom, 2014). It is quite tough to complete software development projects successfully. Realizing how software development might be improved to prevent failure in project design, planning, implementation, monitoring up to project termination is, in fact, one of the biggest obstacles in these kinds of initiatives (Tam, et al., 2020).

While project information management systems have improved project success rates globally, according to Heldman (2018), there is still room for improvement and a need to soften its organizational application. According to Mavi and Standing (2018), project information management systems techniques are becoming more prevalent in the business world, enabling high-tech enterprises and Information Technology (IT) software development teams to provide outcomes faster and more effectively. Further study is advised to uncover fresh strategies to lower project failure rates given that project management information systems approaches might offer innovation and competitiveness.

Projects are most commonly employed in information technology (IT), software development, business process reform, and research and development, according to Wu (2019). It has been stated that the function of the Project Management Information System (PMIS) is crucial to the accomplishment of project objectives and the application of project strategies. PMIS gives project managers crucial knowledge about the cost, time, and performance characteristics of a project, as well as the relationships between these parameters (Davis, & Yen, 2019). According to Fewings and Henjewe (2019), research in the information technology (IT) sector, 75% of big IT projects managed with the aid of project management information systems will be successful, whereas 75% of projects managed without such aid would fail (Light et al., 2005). Wideman (2022) notes that the bulk of projects in the African environment are being tracked by project management information systems, which have helped to reduce software development project failure by revealing various success criteria in several dimensions. "People" is one of those elements, and it stands for a vital component of the movement, requiring driven and adaptable people in a supportive atmosphere. Project management systems are still keeping an eye on 50% of the projects even though they are not yet finished. Investigating the reasons behind the likelihood of assessing project success in the near future is necessary in light of this.

Resource planning, prioritization, and monitoring are difficult for management in Ugandan organizations that are involved in numerous initiatives (Zhang, & Min, 2019). The performance of the organization is continually put under additional stress due to inadequate resource balance. These demands result in low-quality information and a longer turnaround time for the project. Managers may become overwhelmed by the amount of information accessible for decision-making, which prevents them from recognizing the relevant information or detecting the

information's inaccuracy. Using project management information systems (PMIS) is thought to benefit project managers because to the supposed contribution to quicker decision-making and project success (Englund, & Graham, 2019). Studies on the topic show that a number of important factors affect project managers' choices about PMIS use (Ali & Money, 2005). Project managers' decision to use the PMIS depends heavily on the quality of the information it generates (Kavanagh & Johnson, 2020). It is from this background the researcher took initiative to investigate the effect of project management systems on project performance.

1.1.2. Theoretical perspective.

The community involvement hypothesis, developed by Arnstein in 1969, served as the basis for this investigation. According to the notion, local residents gain a tremendous amount of knowledge and awareness about project design, implementation, observation, and evaluation of the project's performance (Ochunga & Awiti, 2017). The foundation of community development theory is the idea that issues facing communities are, in some sense, universal and can, therefore, be dealt with in a manner that is largely consistent across countries. The advantage of the community participation theory is that it strengthens the project's continuity by increasing people's confidence in the project's sustainability through participatory project design and implementation, project resourcing, and M&E (Oino, 2017). According to Cooper and Sommer (2018), the theory's weaknesses include a lack of cohesion (partnership and collaboration), a lack of involvement and communication, a lack of coordination (services, resources, and support), and a lack of service access. Based on the validity of this idea, this study examined how community involvement affected the viability of donor-funded potato projects.

1.1.3. Conceptual perspective

The logical organization of the data required for a business to successfully complete projects is provided by information systems for project management (Kliem & Ludin, 2019). A PMIS typically consists of one or more software programs and a methodical process for acquiring and using project information, according to Chang and Hwang (2018). Project management information systems software is software that controls and organizes the flow of project data and information (Wideman, 2022). A PMIS assists project managers in making better plans, keeping track of progress, and completing project deliverables while limiting data overload (Cui et al., 2018). A project management information system gathers, organizes, and makes use of project

data through one or more software programs (Grover et al. 2018). The total evaluation of a project's success in terms of scope, money, and timeline is known as its performance (Popovi et al., 2018). Project performance management is the process of creating, implementing, and managing initiatives that enhance an organization's performance and strategy. Project performance management is the process of creating, implementing, and overseeing initiatives that enhance an organization's performance and strategy. The entire image is more important to project performance management than task accomplishment (Soto-Acosta, 2020).

1.1.4. Contextual perspective

With more than 580,000 connections to its customer base in more than 240 municipalities, National Water and Sewerage Corporation-Uganda's largest urban water authority-plays a vital role in providing portable water and sewerage services. According to the Water Act, Cap.152.1, its mission is to sustainably and fairly deliver high-quality, affordable water and sewerage services to the satisfaction of all stakeholders while protecting the environment. The passage of NWSC Statute No. 7 of 1995 and NWSC Act of 2000 under the new legal framework reinforced its position in court. To enable the corporation to operate in a financially feasible and commercially viable manner, the powers and structure were altered (NWSC, Integrated Annual Report 2016/17). NWSC is functioning in various towns for efficient service delivery, and Kabale Municipality is one of them.

NWSC Kabale branch is found in Kabale Municipality, Kabale District, South-western Uganda. National Water Kabale branch has been having many projects like Bunyonyi water reliability project, Rubaya water supply project, Kaziniro water supply project. The effectiveness of all of these projects is in doubt. Despite the projects' dubious performance from 2017 to 2022, the government still provided them with all necessary resources. Only 35% of projects that were carried out were successful. The 65% is still up in the air. The shareholders are perplexed as to why the company is not operating efficiently although the government has provided them with all required support. In light of this, the researcher conducted a study to determine how project management information systems affect project performance at the NWSC Kabale branch.

1.2 Statement of the problem

NWSC has been implementing projects namely, Bunyonyi water reliability project, Rubaya water supply project, Kaziniro water supply project. The effectiveness of all of these projects is in doubt. Despite the projects' dubious performance from 2017 to 2022, the government still provided them with all necessary resources. Only 35% of projects that were carried out were successful. The 65% is still up in the air. The shareholders are perplexed as to why the NWSC is not operating efficiently although the government has provided them with all required support. This could be attributed to the methods they are using during project design, planning, implementation monitoring and evaluation up to termination that measure the project performance at NWSC. In light of this, the researcher conducted a study to determine how project management information systems affect project performance at the NWSC Kabale branch.

1.3 Purpose of study

This study sought to investigate the effect of project management information system on project performance of NWSC- Kabale.

1.4. Objectives of the study

- 1) To determine the effect PMIS software on the performance of NWSC- Kabale projects.
- 2) To investigate the challenges of Project Management Information System towards user satisfaction and performance of NWSC- Kabale projects.
- 3) To examine the contributions of Project Management Information System, use by the manager towards performance of NWSC- Kabale projects.

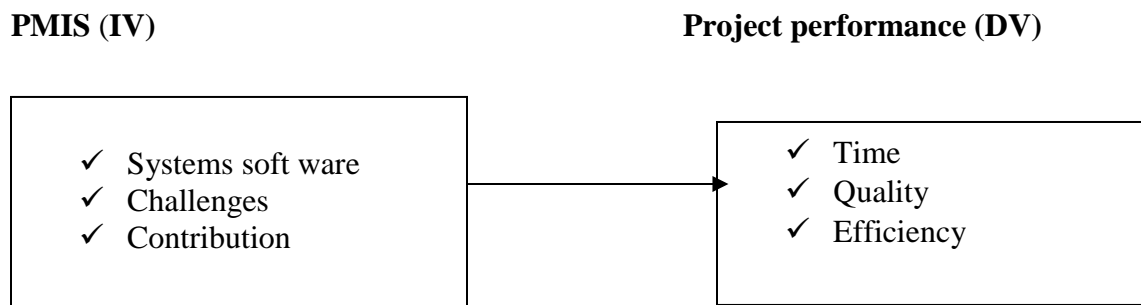
1.5 Research questions:

- 1) What is the influence of PMIS system software and performance of NWSC- Kabale projects?
- 2) What could be the challenges of Project Management Information System towards user satisfaction and performance of NWSC- Kabale projects?
- 3) What are the contributions of Project Management Information System use by the manager towards performance of NWSC- Kabale projects?

1.6. Conceptual framework

A conceptual framework is the most recent iteration of the researcher's map of the area under study, according to Kerzner, (2018). As a result, conceptual frameworks may change as research advances and shows a connection between study variables (Bryman, 2022). For the purposes of this study, project management information systems was regarded as an independent variable, project performance as a dependent variable. The conceptual structure is displayed below.

Figure 1.1: Showing the conceptual framework on project management system on project performance



Source: Ying-, et al, (2017) Modified by the Researcher 2022.

In the conceptual model shown above, PMIS was regarded as an independent variable and project performance as a dependent variable. The study conceptualized PMIS in three dimensions, including the software, challenges and contributions. In terms of DV it was time, quality and efficiency.

1.7 Scope of the study:

1.7.1 Content scope:

The study focused on influence of project management information system attributes on project performance of National Water and Sewage Cooperation (NWSC) of Uganda- Kabale Area. Emphasis was put on System quality of information; the System user and the System use during the entire project life cycle.

1.7.2 Geographical scope:

The study was carried out Kabale Municipality which is situated in Kabale District and lies between coordinates: 1° 15' 0" S and 30° 0' 0" E to the South of Western Uganda. It is one of the

thirteen municipalities in Uganda and borders with Kitumba sub-county to the south, Bubare sub-county (which is now in Rubanda District) to the north and Kyanamira sub-county to the East. Kabale municipality is the main centre of activity for Kabale district and arguably the entire South-western Uganda. It is a vibrant town and a regional transport hub because it has the main road-links to Kisoro, Kanungu, Ntungamo and Rukungiri districts. It also serves as a transit to Rwanda through Katuna border situated 22 Kms away from the town and the Democratic Republic of Congo through Kisoro at Bunagana border post.

1.7.3 Time scope

The study considered the period from 2017 up to 2022. This allowed the researcher to concentrate on variables effectively.

1.8 Significance of the study:

- (i) A lot of studies and literature focus on performance but little attention has been given to Systems that contribute to the performance in project planning and management. It is hoped that when the study findings could be used by the policy makers in promoting PMISs to get good results that is to say contribute to the existing body of knowledge.
- (ii) The study generated knowledge on the relationship between Information Systems use and project performance.
- (iii) Research could be of help to the government and planners to get rid of information errors that affect projects completion.
- (iv) The research study may help to inform National Water and Sewage Cooperation (NWSC) Management about the performance related challenges and develop strategies to minimize them.

1.9 Definitions of Key Concepts:

Project: Projects is a short-term endeavour undertaken to create a unique product or service

Project Management Information Systems: is a system that converts data into information, communicated in an appropriate form to managers at levels of an organization. The information can contribute to effective decision making or planning to be carried out.

Organizational performance, although not a precisely defined concept, is assessed in terms of the results that an organization achieves in relation to its objectives. In principle, it can be measured at the output, outcome or impact level, and, less rigorously, as the organization's compliance to rules.

Satisfaction: in contrast to motivation, refers to a state of contentment that is not necessarily related to action.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction:

This chapter deals with the academic literature on the influence of Project Management Information System attributes on project performance. Literature was reviewed based on the theoretical review objectives of the study, and summary of literature / research gaps

2.1. Theoretical Background

The community involvement hypothesis, developed by Arnstein in 1969, served as the basis for this investigation. According to the notion, local residents gain a tremendous amount of knowledge and awareness about project design, implementation, observation, and evaluation of the project's performance (Ochunga & Awiti, 2017). According to the premise that community problems are, in some way, universal across all civilizations, it is possible to handle them in a manner that is more or less similar. The advantage of the community participation theory is that it strengthens the project's continuity by enhancing methodical and supervisory skills, which increases people's confidence in the project's sustainability through participatory project design, implementation, resourcing, and M&E (Oino, 2017). According to Cooper and Sommer (2018), the theory's weaknesses include a lack of cohesion (partnership and collaboration), a lack of involvement and communication, a lack of coordination (services, resources, and support), and a lack of service access. In order to ascertain the impact of community involvement on the sustainability of donor-funded potato programs, this study applied this hypothesis based on its merits.

2.1.1. DeLone and McLean Information System Success Model (ISSM) (1992)

DeLone and Mclean reviewed the literature that was published between 1981 and 1987, and based on their findings, they developed a taxonomy of IS success. System quality, information quality, utilization, user satisfaction, individual impact, and organizational impact were the six factors or components that they identified in their 1992 study as being crucial to the success of IS (Petter et al., 1992). The model by DeLone and McLean presents several qualities that are distinguished by the two key ideas of system software quality and information quality.

The first IS success model was developed by DeLone and McLean in 1992 and was based on Shannon and Weaver's (1949) theory of communication. The way people complete their

performance is clearly impacted by how the system is used. The effectiveness of the organization may eventually be impacted by this consequence. It was one of the first studies (Seddon et al., 1999) to put some order on the success measures selected by IS researchers. A variety of scholars' theoretical and empirical studies from the 1970s and 1980s served as the foundation for the model. DeLone and McLean examined 100 papers with empirical IS success measurements that were published in seven journals between 1981 and 1987 in order to build the model. They condensed the enormous array of information system success indicators that resulted into six dimensions that collectively provide an integrated picture of IS performance: System Quality, Information Quality, Information Use, User Satisfaction, Individual Impact, and Organizational Impact.

Although the model incorporates the wide range of dependent variables used by IS researchers, it has come under fire. DeLone and McLean modified their model ten years later in response to criticism from other scholars and the current state of affairs. They raised the number of information system success criteria to seven, including service quality, as the service concept was added to IT with the introduction of the Internet. They then analyzed the interdependence and association of these seven factors. The framework is more elaborated by Figure 1.2 below:

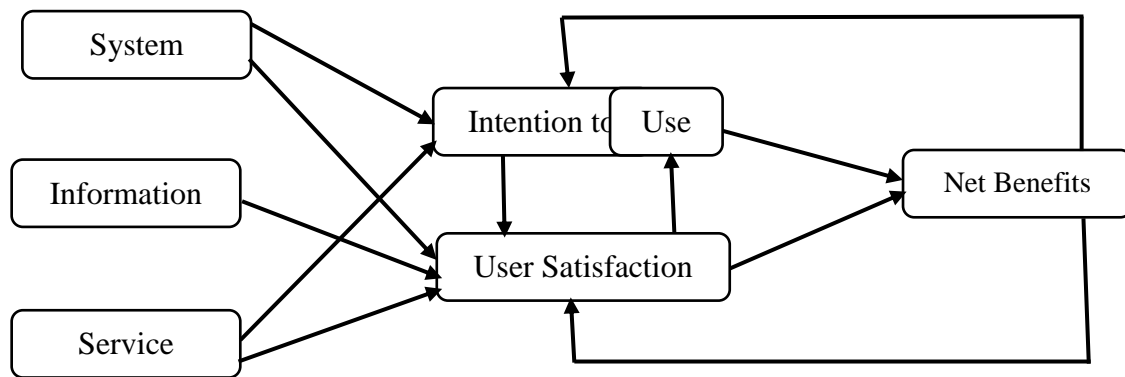


Figure 1.2: The Updated Information System Success Model (ISSM) (DeLone, McLean 2003)

Technology acceptance model (TAM) (Davis et al, 1989)

Several studies of IS success models in the field of development projects have carried out the technology acceptance model (TAM). Chung et al (2009) attempted to determine the elements of

the success or failure of the introduction of enterprise resource planning (ERP) systems that are widely utilized in development projects with the purpose of contributing to assessing, planning, and conducting a project for introducing and establishing an ERP in an enterprise. Two categories were used in the research to separate the success elements for the ERP system: user-related variables, which include output, job relevance, image and outcome, demonstrability, compatibility, and system reliability. Project-related variables, such as internal support, function, and consultant support, make up the second group. This study has a high level of completion since it used substantial data gathering and empirical analysis to offer an ERP success model for development projects. The success model proposed, however, has restrictions in its applicability to other forms of IS because it was validated by concentrating on ERP systems. Hjelt (2007) conducted an analysis of variables pertaining to end-user perceptions of Electronic Document Management (EDM) systems used in significant development projects. A survey was conducted by the research to identify the variables that influence an EDM system's adoption in a development project.

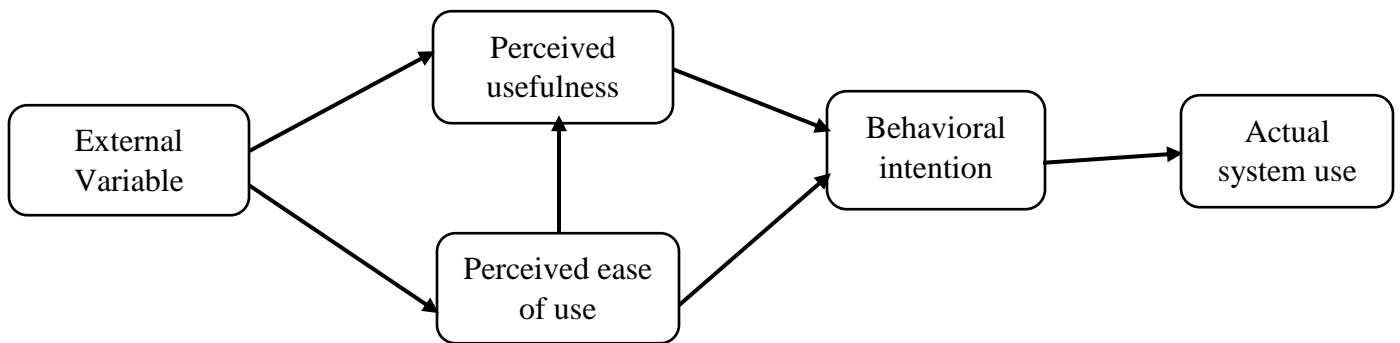


Figure 1.3: Technology Acceptance Model (TAM) (Davis, Bagozzis and Warshaw 1989)

The success model proposed, however, has restrictions in its applicability to other forms of IS because it was validated by concentrating on ERP systems. Hjelt (2007) conducted an analysis of variables pertaining to end-user perceptions of Electronic Document Management (EDM) systems used in significant development projects. A survey was conducted by the research to identify the variables that influence an EDM system's adoption in a development project. Project management information systems prove their position as an effective tool for achieving project success. Using PMIS to manage projects is not enough, but it is essential as it plays an important role in the success of the companies. Therefore, assessing the effectiveness of information systems and how it affects projects' success is a challenging issue. According to the Project Management Institute (Gorla,

Somers, & Wong, 2010), project management information systems are tools and strategies used to disseminate all of the information in projects. According to Turner (2009), project management information systems produce a database that managers need for effective coordination of personnel and project-related tasks. So PMIS can also assess the situation where individuals are working on projects. According to Hasan, Shamsuddin, and Aziati (2013), 75% of IT projects in the IT sector have succeeded with PMIS help, but 75% of projects would fail without it. The widely acknowledged and validated representations and explanations of the IS usage phenomenon are provided by both the ISSM and the TAM. Studies conducted by Larsen, Lee, and Rai (Larsen, 2003), Lee, Kozar, and Larsen (2003), as well as Rai, Lang, and Welker (2002), provide evidence for this.

2.2 Effects of PMIS software and performance of projects

So PMIS can also assess the situation where individuals are working on projects. According to Hasan, Shamsuddin, and Aziati (2013), 75% of IT projects in the IT sector have succeeded with PMIS help, but 75% of projects would fail without it. The widely acknowledged and validated representations and explanations of the IS usage phenomenon are provided by both the ISSM and the TAM. Studies conducted by Larsen, Lee, and Rai (Larsen, 2003), Lee, Kozar, and Larsen (2003), as well as Rai, Lang, and Welker (2002), provide evidence for this. High quality of management information systems means high quality of information, perceived usefulness, decision makers' satisfaction and increase the quality of managerial decision making.

The broad concept of use as a measure of Project Management Information System success only makes sense for voluntary or discretionary users as opposed to captive users; this construct (use) was omitted from the developed model (Visser, Biljon, & Herselman, 2013). According to Peter B. Seddon (1997) the critical factor for PMIS success measurement is not system use but that net benefits should flow from use.

Two main roles are played by the decision making of the managers. First, it helps the managers to take decision based on the information being prepared. Second, when the decision making and decisions are fixed and only the input data change, it is as a suitable repeating to support different types of managers' decisions. It means that MIS is the tool that as the organizational information source provides the required information to the managers and makes them prepared for their

decision making. The managers use MIS as a tool to define the problems being face. As PMIS helps the managers to understand the problems and find the solutions (Shafiie, 2005; Mcleoo, 1998).

2.3 Challenges of Project Management Information System towards user satisfaction and performance of projects

According to Wilcox and Bourne (2002), even if all decision-making eventually involves the future, if we want to use data to enhance decision-making, we need to create a model that offers some predictive support. Data must also enable the development of predictive management capabilities; understanding current performance alone is not adequate. Hemmingway (2006) confirms that developing analytical skills is necessary for better decision-making. One important factor to keep in mind is that project management information systems is a very delicate and intricate field that requires managers to exercise great prudence. According to Wilcox and Bourne (2002), even if all decision-making eventually involves the future, if we want to use data to enhance decision-making, we need to create a model that offers some predictive support. Data must also enable the development of predictive management capabilities; understanding current performance alone is not adequate. Hemmingway (2006) confirms that developing analytical skills is necessary for better decision-making. One important factor to keep in mind is that project management information systems is a very delicate and intricate field that requires managers to exercise great prudence.

Humanistic factors

- The lack of information of the managers and users as they don't know exactly what they want and what their information needs are;
- The lack of understanding of the needs of the users by designers (the lack of correct definition of the needs and their analysis);
- The lack of information of the managers and users about the collaboration method with the designer team;
- The lack of participation of the managers and users in system design.

Organizational factors

- The lack of good conditions for participation and collaboration of the managers, users and system directors;
- The lack of consistency and complexity of the existing manual systems;
- The lack of existing systems and methods analysis before the system design;
- The lack of evaluation of the existing power;
- Bad condition of educating the specialized forces;
- The lack of human resources with management and computer fields and other required specializations (the problems of absorbing human resources);
- Inadequate education of the users;
- Inadequate and incomplete documentation;
- Unsuitable implementation of the system.

2.4 Contributions of Project Management Information System use by the manager towards performance of projects

Because it allows the project manager and team access to the proper quantity and quality of information, using a specialist project management information system has many advantages (Caldwell, 2004). According to Raymond's research, some of the managers who responded to the survey claimed that the Project Management Information System significantly influenced the successful completion of their projects, while others denied this (Raymond, Bergeron 2007). According to study by the Project Management Institute's Gorla, & Somers, & Wong (2010), project management information systems are tools and processes used to communicate all the information in projects. Project management information systems, according to Turner (2009), create a database that managers require for efficient coordination of staff and project-related tasks. PMIS significantly affects managers' capacity to compete, be effective, and handle a range of problems that come up in running a business (Nath & Badgujar, 2013). Managers and other business professionals can benefit from PMIS' information offerings, which address many of their everyday information demands. These decision-makers have predetermined that the reports, displays, and responses produced by PMIS satisfy their information requirements appropriately (O'Brien & George, 2007).

Project management information systems, according to Turner (2009), create a database that managers require for efficient coordination of staff and project-related tasks. PMIS significantly

affects managers' capacity to compete, be effective, and handle a range of problems that come up in running a business (Nath & Badgular, 2013). Managers and other business professionals can benefit from PMIS' information offerings, which address many of their everyday information demands. These decision-makers have predetermined that the reports, displays, and responses produced by PMIS satisfy their information requirements appropriately (O'Brien & George, 2007). The time and money required to employ exact clarifications for project planning, scheduling, monitoring, and controlling may be reduced with the aid of this program. Retailers therefore provided additional support for crucial project lifecycle phases like project risk management and established knowledge management in order to improve not only individual but also monitoring and regulating the entire organization (Ahlemann, 2007). It is obvious that depending on a mediocre information system puts a project at risk and that the decision-making process for a project depends on accurate, timely, and relevant information. One of the most important resources for project managers is information. In spite of this, project managers regularly neglect to deliver the kinds of details required to ensure project success. Utilizing PMIS is one way to satisfy important project information requirements. Additionally, some of PRADHAN's 2017 grounds for developing PMIS are listed in the list that follows.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology that the study followed. It explains the design; study area; population; sample size, sampling techniques and procedure; data collection instruments; the research procedure that was followed; and the data management and analysis techniques that was used in conducting the study.

3.2 Research Design

The study used a cross-sectional survey approach to examine, evaluate, and compare PMIS and project performance at NWSC in Kabale Municipality Kabale district, Uganda. A cross sectional survey offers a unique chance for a thorough and in-depth analysis of particular aspects of the data gathered (Amin, 2005; Abioro, 2018). The target sample's perspectives, preferences, habits, worries, attitudes, and opinions were taken into account in the study, which extrapolates the findings to the entire population (Afkar, 2017). Because it takes into account factors like design economy, speed of data collection, and the ability to understand a population from a tiny portion of it, cross-sectional surveys were appropriate for this study (Kothari (2004). The design of a cross-sectional survey used a mixed methodology. By combining qualitative and quantitative techniques, bias that would otherwise result from using only one technique is neutralized (Amin, 2005). Key informant interviews were conducted using a qualitative technique, while questionnaire surveys and documentary analysis were conducted using a quantitative approach.

3.3 Study Population

The fraction of the population that has been specifically chosen so that the traits of the parents can be studied is referred to as the sample size. The complete group of people, events, or interesting things that the researcher intends to analyse is referred to as the "population" (Afkar, 2017). Moreover, Ruwa (2016) argues that results will often be more trustworthy with a larger sample size. But he also argued that if every member of a group is the same, then picking an even smaller sample produced results that are absolutely accurate because the population being studied is homogeneous. Given comparability in terms of the characteristics to the researched area, it is indicated that a small sample would produce a relatively accurate estimate during the study process. Based on its accessibility and familiarity with the study's subject, the study population

was selected. The study concentrated on the following populations: 06 managers, 6081 waters users (project beneficiaries and 19 political leaders).

3.4 Sample size determination

A number of techniques were used depending on the nature of the population as below. At first stratified sampling was considered for the study and two strata that is to say: NWSC established workers Kabale main branch and NWSC clients of Kabale main branch. Given that the population for each stratum is known, the study used the formula (e) for the first stratum (NWSC established workers Kabale main branch) that enables one to calculate the necessary sample size for a different combination of levels of precision, confidence and variability.

Table 3.1: Target Population, Sample size of the study and sampling techniques

S/No	Details	Sample size	Sampling Technique
1	Managers	06	Purposive Sampling
2	Water users / beneficiaries	216	Simple Random Sampling
5	Political leaders	19	Simple Random Sampling
	Total	242	

Primary Source: NWSC, Human Resource Department, 2023 guided by Krejcie and Morgan Table (1970) for sample size determination.

3.5 Sampling Technique

Sampling is the process of drawing inferences about the population from a limited set of things or a portion of the entire population. It enables the researcher to extrapolate demographic features that are unknown and draw conclusions (Zikmund et al., 2013). The researcher's selection of study participants was aided by the use of cluster and purposeful sampling approaches. Just those individuals who matched the researcher's requirements were included in the purposive sampling (Bryman, 2018). To choose the authorities with the exact information that other respondents would not adequately supply, a purposeful sampling technique was applied. This study also employed the cluster sampling technique, which involves grouping respondents into clusters based on their areas of expertise before randomly selecting a sample from each cluster (Showkat & Parveen, 2017). The best method was clustered sampling because it was to ensure a fair representation of

participants from each department. Participants should ideally be able to be divided into clusters, each with distinct homogenous characteristics (Creswell, 2018).

3.6 Data collection

Data collection, according to Cooper & Schindler (2012), is the act of obtaining and evaluating information on relevant variables in a systematic and established way to address particular research questions, test hypotheses, and assess study results. Data was gathered for this project from both primary and secondary sources.

3.6.1 Primary Sources

Genuine facts from the scene were made up the bulk of the data from primary sources, which were presented in their original form (Amin, 2005). The primary data source for the investigation into the connection between PMIS and the project performance at NWSC, was responses to questions posed by self-administered questionnaires and interview guides.

3.6.2 Secondary Data

Every dataset that the researcher has not personally acquired or analyzed is considered secondary data (Martins et al., 2018). Secondary data was gathered from documents and reports from the NWSC, specifically from the finance and human resources departments, as well as from published literature, textbooks, and previous dissertations that were retrieved from the library, Kabale University repository, and the internet.

3.7 Data collection instruments

Instruments/devices used to collect data are known as data collection instruments Yung (2001). The primary methods for obtaining data for the study were questionnaires and interviewing protocols. The ability to collect qualitative and quantitative data were answered all research questions were a result from this.

3.7.1 Questionnaire

Devices and techniques used to collect data are known as data collection instruments. A self-administered questionnaire was the main tool for data collection in this investigation. According to De Leeuw (2008), a self-administered questionnaire is a technique for data collection in which written questions are offered and written responses from respondents are requested. To ensure

ease, a high response rate, and a high degree of anonymity, questionnaires were employed (Oso & Onen, 2010). On a Likert scale from 1 to 5, the questionnaire's closed-ended items were ordered. Closed-ended Likert-scaled questions were created to aid respondents in making decisions faster, make coding easier for the researcher to do data analysis, and decrease the error gap (Leeuw, 2008).

3.7.2 Interview Guide

NWSC's selected workers received an interview guide that had been produced. According to Amin (2005), an interview guide can be either structured or unstructured. For this study, an unstructured face-to-face interview guide was created. The technical personnel and department leaders of the NWSC were given the interview guide. Each study variable was the subject of two questions. The researcher conducted interviews to get detailed insights on the phenomenon being studied (Creswell, 2018). The researcher gathered a lot of data quickly with the use of interview. In order to acquire qualitative data to support the quantitative information while reporting, an interview guide was useful for triangulation purposes.

3.8 Quality Control

Any instrument's suitability for use in research is determined by its validity and reliability. Validity is the term used to describe the instrument's suitability. It is the instrument's capacity to produce accurate results and to measure the things that it is intended to measure. The consistency of the instrument in measuring whatever it is designed to measure is referred to as reliability. (Amin, 2005)

3.8.1 Validity of the research instrument

Validity refers to how well data analysis results match the phenomenon under investigation. The study tools were developed by the researcher, reviewed by the supervisors (Kabale University), and pre-tested using selected respondents in the NWSC who share the same criteria. Pre-testing the research tool enables the early identification and correction of defects such as unclear or ambiguous questions, insufficient space for writing responses, cluttered questions, and inaccurate numbering (Kothari 2014). The content validity index (CVI) is determined by adding the number of items that each judge deemed valid, divided by the total number of items in the instrument. The researcher consulted with the two (Kabale University) supervisors, enlist the help of four judges

to rate the items for each instrument, and then use the results to determine the instrument's content validity. We'll compute the CVI average.

$$\text{Thus, CVI} = \frac{\text{Number of items rated relevant by expert}}{\text{Total number of items in the instrument}}$$

Summary of the reliability statistics

$$\text{Judge 1.} \quad = 40/46=0.869$$

$$\text{Judge 2.} \quad =43/46= 0.934$$

$$\text{Judge 3.} \quad = 42/46= 0.913$$

$$\text{Judge 4.} \quad = 41/46=0.891$$

$$\text{Therefore } 0.869+0.934+0.913+0.891=3.607. \quad 3.607/4=0.901$$

These findings suggested that study tools were appropriate for data collecting on the impact of PMIS on project performance in Uganda, specifically for NWSC KabaleBranch. According to Amin (2005), the average content validity index (CVI) number of items certified valid divided by the total number of items must be at least 0.7 for instruments to be acknowledged as valid. Considering that the CVI value is greater than 90%, the instruments were valid (Amin, 2005).

3.8.2 Reliability of research instruments

Reliability is the extent to which an instrument consistently measures whatever it is designed to measure (Amin, 2005). The Cronbach alpha (Cronbach, 1951) reliability coefficient, used to measure the internal consistency or average correlation of its items, is used to assess the reliability of a survey instrument. The generated scale becomes more reliable as the score rises. Schrepp (2020), for instance, claims that a reliability coefficient of 0.7 alpha is sufficient. In this study, the researcher was to ensure dependability by utilizing the same instruments on the same pertinent respondents three times to see if they produce the same results. The researcher conducted a pilot study on the impact of PMIS on project performance at NWSC Kabale Branch.

The scores found at 0.7 and above alpha values indicated good credits hence better for use (Amin, 2005).

Table 3.1: The Demission of the Independent Variables

Variable	Reliability statistics
Software systems	0.890
Challenges	0.904
Contributions	0.941
Project performance	0.866
Total	3.601
Average	$3.601/4=0.900$

Source: Field data 2023.

Cronbach's Alpha was 0.900. A reliability coefficient (alpha) of 0.7 range is considered acceptable and those above 0.9 are considered good (Campbell & Walters, 2014). Therefore, the questionnaire had good reliability.

3.9 Data Collection Procedure

Following a successful proposal defense and approval, the researcher was given authorization to start fieldwork and a consent letter from Kabale University. Also, the researcher requested authorization from the NWSC to interview participants for his study. The researcher put the tools to the test, made necessary adjustments, prepared the tools, and then went for the field to conduct research. During the course of two months, the researcher gathered information from respondents. After the data has been analysed and interpreted, a report was produced.

3.10 Data Analysis

Data analysis is the process of examining, cleaning, transforming, and modelling data to draw inferences and assist in decision making (Gorard, 2013)

3.10.1 Analysis of Quantitative Data

The quantitative data analysis employed both descriptive and inferential statistics. Data initially assessed by computing frequencies with means and percentages to establish how respondents feel about the connection between PMIS and project performance at NWSC Kabale branch. The Pearson's coefficient (+ or - to show the direction of the relationship between the variables) was used in the correlation approach, which is based on two-tailed correlations and significant more

than or equal to 0.05. A negative correlation indicates an inverse relationship between the two variables, whilst a positive correlation suggests a direct positive association between the variables. The regression analysis measured the magnitude of the independent factors' influence on the dependent variable using updated R2 values and significant values (Amin, 2005).

3.10.2 Qualitative data analysis

To assess qualitative data, content analysis was performed. Using content analysis, qualitative opinions were categorized, patterned, and emerging themes were found (Mugenda & Mugenda, 2003). Key informant replies were categorized into recurrent themes. The findings were given along with selected direct quotations from participants who serve as examples, and were highlighted the recurrent concerns that emerge in response to each guiding topic. To better grasp the true nature of relationships between study variables, information gained from quantitative results were triangulated with findings from qualitative data.

3.11 Measurement of variables

To evaluate the study's variables, nominal, ordinal, and interval scales were employed. A nominal scale was used to collect data on variables that can be divided into two or more equally exclusive and mutually exclusive categories, such as categorizing gender and educational background. The researcher also assessed the respondents' various ideas and attitudes using the interval scale. Using a Likert scale with a range of 1 to 5, responses were assessed (1–Strongly agree, 2–Agree, 3–Not sure, 4–Disagree, and 5–Strongly disagree).

3.12 Ethical Considerations

The researcher made sure that all ethical considerations were taken into account in order to prevent degrading the standard of the research. The researcher acquired respondents' informed consent before collecting their data. He also sought to prevent plagiarism by correctly citing authors, making sure that important sources were treated privately.

3.13. Limitations of the study

The researcher discovered bias in the responses, especially from those who were not worried about the link between PMIS and project performance. The research assistants and the researcher received instruction on how to interact with respondents and find a solution.

The researcher anticipated a challenge in being unable to meet with some of the respondents due to the nature of their work schedules. In these circumstances, the researcher made an attempt to arrange encounters with this group of respondents.

It was challenging for the researcher to find enough money to cover travel expenses, print study items, and contact all of the anticipated respondents.

CHAPTER FOUR

PRESENTATION OF RESULTS

4.0 Introduction

The study's objective was to investigate the effect of PMIS on project performance at NWSC. This chapter gives findings in accordance with the study's objectives, which included: to examine the effect of software systems and project performance at NWSC; to analyze the challenges affecting project performance at NWSC; and to assess the contributions of PMIS on project performance at NWSC Kabale branch. The response rate and conclusions on the respondents' demographic characteristics are presented before the analysis and presentation of findings in accordance with the study's objectives.

4.1 Response rate

There was a positive response from the respondents, that is to say 90% (242) of the total sampled respondents (269).

4.2 Findings on general information

4.2.1 Personal Data

The researcher identified the respondents' bio data in respect of gender, age, level of education and the length of service or period of stay in service in order to appreciate the reliability and the accuracy of the research findings.

Table 4.1: Gender of the respondents

Respondents		Frequency	Percent
Valid	Male	150	62%
	Female	92	38%
	Total	242	100%

Source: primary data 2022

According to Table 4.1 above, 62% of the respondents were men and 38% were women. This suggests that there was gender bias free in the survey, indicating that women were not involved in issues at all, according to the National Water and Sewage Corporation.

Table 4.2: Age range of respondents

	frequency		Percent	Valid Percent	Cumulative percent
Valid	20-24	16	6.6	6.6	7.0
	25-30	34	14.0	14.0	20.0
	31-34	96	39.6	39.5	59.0
	35-50	66	27.3	27.2	87.0
	above 50	30	12.3	12.1	100.0
	Total	242	100	100	

Source: Primary data, 2022

According to the data in Table 4.2 above, 6.6% of respondents were between the ages of 20 and 24; 13.6% were between the ages of 25 and 30; 39.6% were between the ages of 31 and 34; 27.2% were between the ages of 35 and 50; and 12.6% were over the age of 50. This demonstrated that the contacted respondents were of an age where they could respond to the questionnaire.

Table 4.3: Marital status of the respondents

	frequency		Percent
Valid	Single	44	18.5
	Married	176	72.8
	Separated	10	3.8
	Widowed	12	4.9
	Total	242	100

Source: Primary data 2022

According to findings in Table 4.3, 18.5% of respondents identified as single, 72.8% as married, 3.8% as separated, and 4.9% as widowed. This demonstrates that individuals with various marital statuses who worked for the National Water and Sewage Corporation were eager to voluntarily contribute towards finishing the study.

Table 4.4: Level of respondents' qualification

		Frequency	Percent (%)
Valid	Certificate	60	25
	Diploma	96	40
	Degree	70	29
	Masters	11	4
	PHD	5	2
	Total	242	100

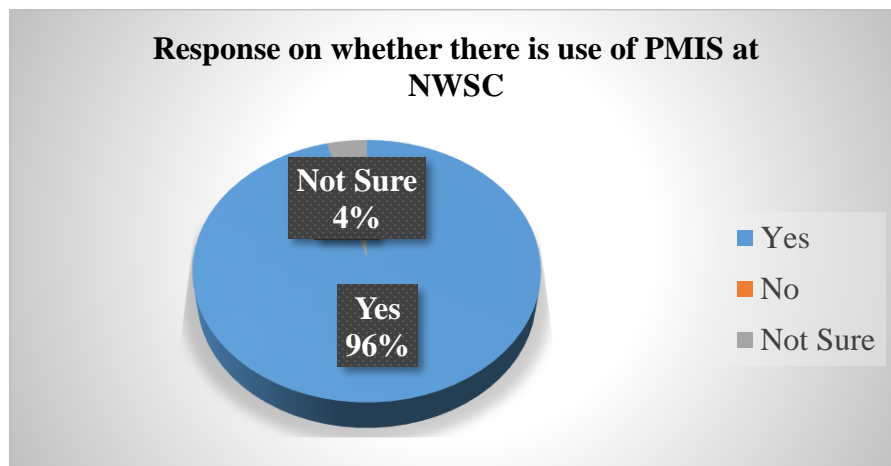
Source: Primary data 2022

Table 4.4 showed that 24% of respondents had certificates, 40% had diplomas, 29% had Bachelor's degrees, 4% had Master's degrees, and only 2% had a PhD. This suggests that the sampled target had obtained at least the necessary degree of education to take part in the achievement of superior performances.

4.3 Software system and performance of NWSC- Kabale projects

The researcher had to first determine whether PMIS software was used at the NWSC Kabale branch in order to effectively produce unbiased data for this purpose. And the outcomes were as shown in Figure 4.1 below.

Figure 4.1: Showing Response on whether there is use of PMIS at NWSC- Kabale



Source: Primary data 2022

According to the aforementioned graph, 96% of respondents agreed that PMIS was really used at the NWSC Kabale branch, with only 4% disagreeing. Further, the respondents listed the following PMIS systems in Table 4.5 as being used at NWSC-Kabale.

Table 4.5: Showing PMIS software used at NWSC- Kabale

S/N	PMIS	Purpose
1	Billing system	generating water bills, revenue analysis
2	Iscalar	simple integer statistical counters
3	e-inventory	handling all stoke items like chemicals, pipes and fittings, electromechanical, stationary
4	CRM	customers relations to handle complaints
5	Outlook	communication (emails)
6	Buainess Intelligence platform (BIP)	interface management analysis production, billing, inventory

Source: primary data 2022

4.3.1 Correlation Analysis

The study continued by looking for a relationship between project performance and software coefficient. According to this, the association between the independent and dependent variables was strong and going in one particular direction.

The following results in Table 4.6 obtained.

Table 4.6: Correlation Analysis

		Systems Software	Quality information Generated	Systems User	Systems Use	Project Performance
System software	Pearson Correlation	1				
	Sig. (2-tailed)	.000				
Quality of Information generated	Pearson Correlation	0.595	1			
	Sig. (2-tailed)	0.00	0.00			
System user	Pearson Correlation	0.930	0.871	1		
	Sig. (2-tailed)	0.00	0.00	0.00		
System use	Pearson Correlation	0.976	0.922	0.953	1	
	Sig. (2-tailed)	0.00	0.00	0.00	0.00	
Project performance	Pearson Correlation	0.971	0.953	0.786	0.921	1
	Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00

Source: Primary data 2022

The study's correlation analysis revealed a significant positive correlation between the project management information system and project performance, with a p-value of 0.000 and a correlation coefficient of 0.971. The study also discovered a significant association between information quality and project performance, with correlation coefficients of 0.953 and a p-value of 0.000. The study also discovered that there was a correlation coefficient of 0.786 and a p-value of 0.000 between the user of project management information and project performance. With a correlation coefficient of 0.921 and a p-value of 0.000, the study also discovered a favourable association between the adoption of project management information systems and project performance.

4.3.2 Influence of PMIS software on the performance of NWSC- Kabale projects

The researcher went ahead to find out the direct effects of PMIS software on NWSC projects in Kabale Community and the following results as tabulated in Table 7 below were obtained.

Table 4.7: Showing effect PMIS software on the performance of NWSC- Kabale community projects

Statements	Strongly agree		Agree		Disagree		Strongly Disagree		Total (f)	Total (%)
	f	%	f	%	f	%	f	%		
With the Inventory of PMIS at NWSC- Kabale improved service delivery	20	83	30	12	12	4	0	0	242	100
There is right and quick information flow with NWSC projects	122	50	100	41	20	9	0	0	242	100
There is cost management by use PMIS like in the billing system.	80	33	22	9	10	41	40	17	242	100
Projects like extension of water lines, gravity power, servicing base on the Information managed by PMIS.	140	58	60	25	42	17	0	0	242	100
There has been time management in service delivery due to PMIS systems used in billing.	230	95	10	4	2	1	0	0	242	100

Source: primary data 2022

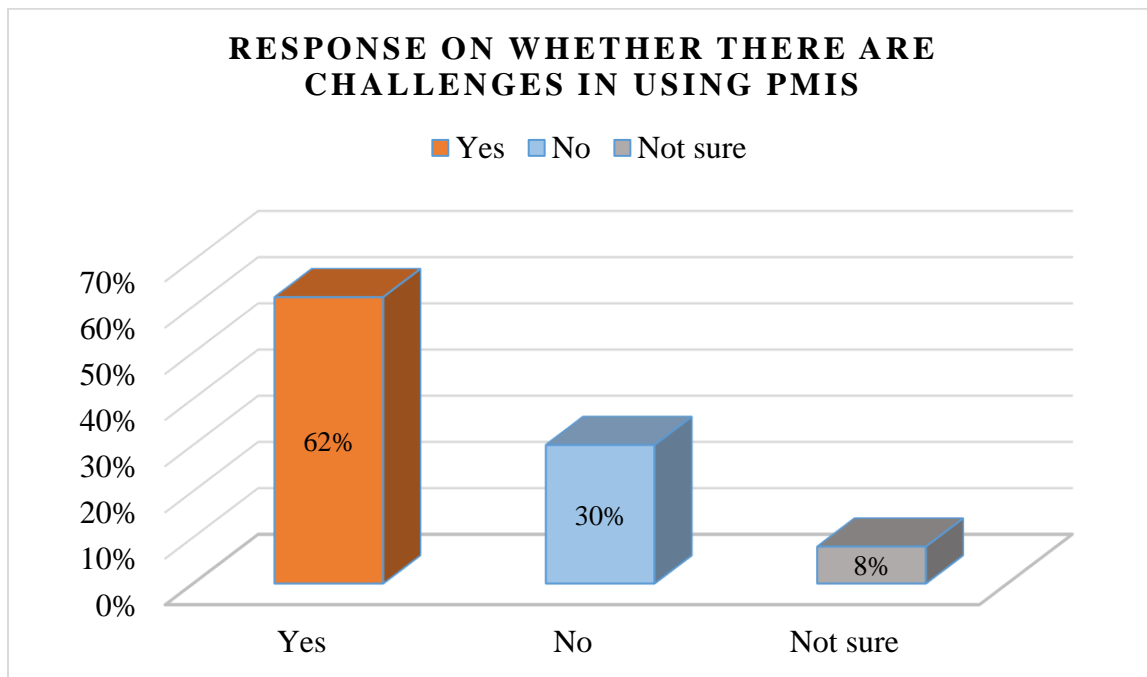
According to Table 4.7 above, the majority of respondents (83%) agreed that service delivery had improved as a result of the PMIS inventory at National Water and Sewage Corporation's Kabale Branch. 58% of respondents strongly agreed that larger projects like the extension of water lines, gravity power, and servicing base of information captured by PMIS, while 95% strongly agreed

there had been time management in service delivery. 50% of respondents also approved that indeed PMIS had led to right and quick flow of information with NWSC projects. 80% again strongly agreed to the statement that there was cost management because of the use of PMIS in the billing system.

4.4 Challenges of Project Management Information System towards user satisfaction and performance of NWSC- Kabale projects

To emphasize this particular goal, the research asked NWSC- Kabale staff members if they found it difficult to use PMIS there. The results are shown graphically below:

Figure 4.2: Showing whether there are challenges in using PMIS at NWSC- Kabale.



Source: Primary data 2022

Figure 4.3 above shows that there were difficulties using PMIS at the NWSC Kabale branch, which was supported by the biggest percentage of respondents (62%) who agreed with the statement, as opposed to 30% who disagreed and 8% who were unsure. The study went on to uncover PMIS's difficulties in enhancing user happiness and the effectiveness of NWSC-Kabale initiatives. The challenges were divided into two groups for easier understanding, namely humanistic and organizational, and the findings are shown in Tables 4.8 and 4.9.

Table 4.8: Showing humanistic challenges of PMIS towards user satisfaction and performance of NWSC- Kabale projects

Humanistic challenges of PMIS towards user satisfaction and performance of NWSC- Kabale projects	Strongly Agree		Agree		Disagree		Strongly Disagree		Total (f)	Total (%)
	f	%	f	%	f	%	f	%		
The lack of information of the managers and users as they don't know exactly what they want and what their information needs are.	0	0	10	37	13	48	4	15	27	100
The lack of information of the managers and users about the collaboration method with the designer team.	20	74	7	26	0	0	0	0	27	100
The lack of participation of the managers and users in system design.	0	0	25	92	2	8	0	0	27	100
The lack of understanding of the needs of the users by designers (the lack of correct definition of the needs and their analysis)	0	0	0	0	20	74	7	26	27	100

Source: Primary data 2022

According to Table 4.8 above, the majority of respondents (48%) disagreed with the statement that managers and users lacked information because they were unsure of their exact needs and wants. 15% of respondents strongly disagreed in contrast to the 37% of respondents who agreed with the statement. The assertion that managers and users lack knowledge about the manner of collaboration with the design team received a favorable response from respondents, with 74% strongly agreeing and 26% agreeing with the statement. When it came to the claim that managers'

and users' lack of involvement in system design posed significant obstacles to PMIS users' happiness, the biggest percentage of respondents (92%) agreed with the claim, while just 8% disagreed. However, when it was stated that designers' failure to understand the needs of users (the incorrect definition of those needs and their analysis) was a difficult challenge for the NWSC Kabale branch, the majority of respondents (74%) disagreed with the statement, and an additional 26% strongly disagreed. In addition to the aforementioned, the researcher continued to look for solutions to the organizational issues, and the findings are shown in Table 10 below.

Table 4.9: Showing Organizational challenges of PMIS towards user satisfaction and performance of NWSC- Kabale projects

Organizational challenges of PMIS towards user satisfaction and performance of NWSC- Kabale projects	Strongly agree		Agree		Disagree		Strongly Disagree		Total (f)	Total (%)
	f	%	f	%	f	%	f	%		
The lack of good conditions for participation and collaboration of the managers, users and system directors	0	0	15	56	12	44	0	0	27	100
The lack of existing systems and methods analysis before the system design	24	89	3	11	0	0	0	0	27	100
The lack of evaluation of the existing power	18	67	0	0	9	33	0	0	27	100
Bad condition of educating the specialized forces	0	0	0	0	25	92	2	8	27	100
The lack of consistency and complexity of the existing manual systems.	20	74	7	26	0	0	0	0	27	100

Source: Primary data 2022

Results from Table 4.9 above confirm that there were insufficiently favourable conditions for managers, users, and system directors to collaborate and participate, as indicated by the highest percentage of respondents (56%) who agreed with the statement as opposed to the 44% of respondents who disagreed with it. The majority of respondents (89%) agreed that the lack of a study of existing systems and methodologies prior to the system design posed a significant difficulty to PMIS users at NWSC Kabale, while 11% disagreed. The majority of respondents (67%) responded favourably by agreeing with the assertion that there is a problem with the lack of appraisal of the existing power, while 33% of these respondents disagreed with the statement.

Respondents (92%) disagreed with this statement, and another 8% strongly disagreed, citing the difficulty in educating the specialized forces. Respondents (74%) strongly agreed with the statement that the previous manual systems lacked consistency and complexity, and the remaining 26% also agreed with the statement.

Hypothesis testing

The study put the potential hypotheses to the test in order to be able to generalize the findings from the population samples. To do this, statistical inference was employed. Correlation and regression studies were performed to ascertain whether there was a relationship between the independent and dependent variables, its strength and direction, to build a relationship model, and to test the hypotheses. This led to the use of the Pearson's product moment correlation coefficient to determine the degree of the link.

Table 4.10: Correlation analysis for challenges and project Performance

	Project performance	Challenges
Pearson	1	.662**
Project performance		.000
Correlation		

Challenges	Sig. (2-tailed)	243	243
	N	.662**	1
	Pearson	.000	
	Correlation		
	Sig. (2-tailed)	243	243
	N		

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

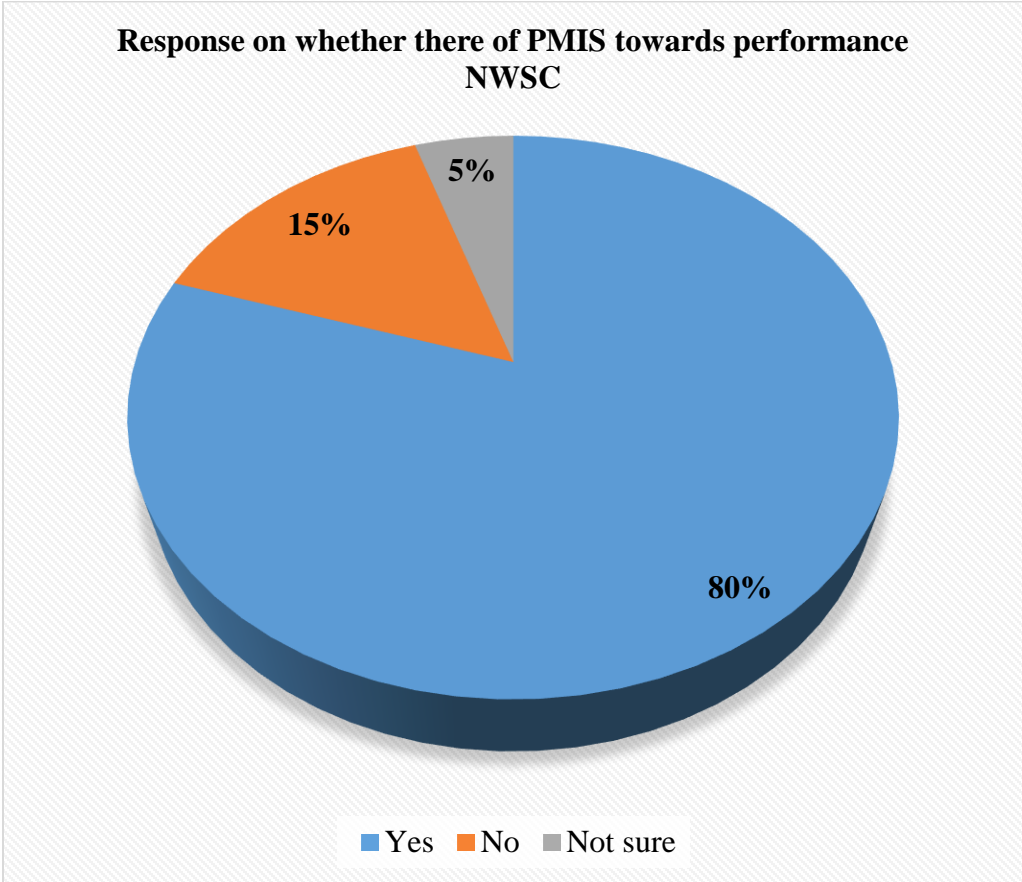
Source: Primary Data 2022

It is evident from Table 4.10 that there is a positive significant correlation between challenges that and project performance ($r = .662$, $p < 0.01$). This finding means that project performance is associated with project performance. In effect, this finding supports research question 2.

4.5 Contributions of Project Management Information System, use by the manager towards performance of NWSC- Kabale projects

It was crucial to understand through the study how people saw PMIS's role in the accomplishment of NWSC projects in Kabale. The results were represented graphically as follows:

Figure 4.3: Showing whether there is any contribution of PMIS towards performance of NWSC projects in Kabale.



Source: Primary data 2022

According to the aforementioned graph, the biggest proportion of respondents (80%) attest that PMIS did in fact contribute to the success of NWSC initiatives. Only 6% of respondents were passive or unsure, compared to 15% who responded negatively. In addition to the aforementioned, the researcher continued to learn more about some of the major contributions mentioned, and the results shown below were attained.

Table 4.11: Showing contributions of Project Management Information System use and project performance of NWSC- Kabale projects

Statements on contributions of PMIS use by the manager towards performance of NWSC- Kabale projects	Strongly agree		Agree		Disagree		Strongly Disagree		Total (f)	Total (%)
	f	%	f	%	f	%	f	%		
PMIS at NWSC has helped in decreasing the time and cost that are required to use precise clarifications for project planning.	24	89	3	11	0	0	0	0	27	100
There has been project risk management with the use PMIS	25	92	2	8	0	0	0	0	27	100
There is ease in monitoring and controlling the whole NWSC projects in Kabale.	20	74	0	0	7	26	0	0	27	100
Project management information systems create a database that NWSC managers need for good coordination of people and activities in projects	27	100	0	0	0	0	0	0	27	100
PMIS produces information products that support many of the day-to-day decision-making needs of NWSC managers	22	81	5	19	0	0	0	0	27	100
There is easy scheduling, monitoring, and controlling with use of current PMIS at NWSC	27	100	0	0	0	0	0	0	27	100

Source: Primary data 2022

According to the responses in Table 4.11 above, the Kabale community made a variety of beneficial contributions to the success of NWSC initiatives. The majority of responders (89%) strongly agreed with the assertion that PMIS at NWSC has assisted in reducing the time and expense needed to employ accurate explanations for project planning, with 11% also strongly agreeing.

Respondents (92%) again strongly agreed to the fact that There has been project risk management with the use PMIS. This was also complemented by the 8% who also agreed to the statement.

Respondents (74%) responded favorably by strongly agreeing to the assertion that it is easy to monitor and control the entirety of the NWSC projects in Kabale, while 26% disagreed with the statement. The assertion that project management information systems produce a database that NWSC managers need for effective coordination of people and activities in projects was overwhelmingly agreed upon by respondents (100%) once more. The study also discovered that 81% of respondents and 19% of the respondents said that PMIS delivers information products that assist many of the daily decision-making needs of NWSC managers. All respondents (100%) strongly agreed that the usage of the present PMIS at NWSC makes scheduling, monitoring, and controlling tasks simple. This was another contribution that the respondents noted.

Hypothesis Testing;

The Pearson's product moment correlation coefficient was thus utilized to calculate the size of the association in order to confirm the alternative hypothesis that there is a strong relationship between control environment on financial success, as shown in the table below:

Table 4.12: Correlation analysis contributions on project performance

	Project performance	Contributions
Project performance	Pearson	1
	Correlation	.656**
	Sig. (2-tailed)	.000
	N	243
Contributions	Pearson	.656**
	Correlation	.000
	Sig. (2-tailed)	.000
	N	243

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

Source: Primary Data 2022

Table 4.12 makes clear that there is a strong positive correlation ($r=.656$, $p 0.01$) between contributions and project performance. This result indicates that project performance and control activities are related. This result essentially confirms research question 3.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter covers discussion of findings in relation to primary research objectives chapter one with comparison of other literature, conclusions and recommendations.

5.1 PMIS software on the performance of NWSC- Kabale projects

With a correlation coefficient of 0.786 and a p-value of 0.000, the study discovered a relationship between project performance and the use of project management information. With a correlation coefficient of 0.921 and a p-value of 0.000, the study also discovered a favourable association between the adoption of project management information systems and project performance. The study emphasized additional direct consequences in support of these claims, including better service delivery, accurate and prompt information exchange with NWSC projects, cost control due to the usage of PMIS in the invoicing system, and time management in service delivery, among others. The study's findings concur with those made by Petter et al. (2008). He emphasized the importance of management information system quality.

5.2 Challenges of Project Management Information System towards user satisfaction and performance of NWSC- Kabale projects

According to Raymond's research, several of the managers who took part in the survey indicated that the Project Management Information System had a significant impact on the successful conclusion of their projects, while others did not (Raymond, Bergeron 2007). The findings of this study also showed that, generally, the poor use of project management information systems depended on a system of lower quality that provided lower quality information; as a result, they used their system less and received less assistance in doing their project management tasks. According to the study, humanistic issues such as managers' and users' lack of knowledge about the process of engagement with the design team and their lack of participation were the biggest obstacles to the implementation of PMIS. Additionally, it was discovered that there were organizational issues that primarily affected the use of PMIS. These issues included a lack of analysis of current systems and methods prior to the system design, a lack of assessment of the

current power situation for training the specialized forces, and a lack of consistency and complexity of the existing manual systems.

5.3 Contributions of Project Management Information System, use by the manager towards performance of NWSC- Kabale projects

Utilizing a customized project management information system has many benefits since it gives the project manager and team access to the right amount and quality of information (Caldwell, 2004). Due to the high quality of the information produced by the PMIS, this study showed that the usage of the various function tools, such as planning, monitoring, evaluation, and reporting tools, had improved the likelihood of project performance. Because PMIS tools increase project managers NWSC- Kabale's capacity to carry out the various tasks in their youth polytechnics, they are more productive in their work.

The study's findings show that the main benefits of PMIS are easy scheduling, monitoring, and controlling with use of the current PMIS at NWSC, production of information products that support many of the day-to-day decision-making needs of NWSC managers, and ease in monitoring and controlling the entire portfolio of NWSC projects.

5.4. Conclusions

In order for the project team to complete their jobs effectively and efficiently, PMIS must deliver pertinent, accurate, and secure information. The ability of the user to manage development projects using the information supplied by the system, along with its accuracy and breadth, are more important than the software's level of complexity. The users can carry out their activities in a much more professional manner thanks to this knowledge. Project success occurs when tasks are completed to the highest standard. Additionally, it is concluded that organizations ought to use PMIS for project management. PMIS ensures improved project management since it generates pertinent information required for project management. The findings of this study confirmed previous research's recommendations that project management information system success models need to be continuously validated and questioned. They also demonstrated that the Kabale branch of the National Water and Sewage Corporation benefits from using a project management information system.

5.5. Recommendations

Since there is a significant correlation between project management software, information quality, system user, and system use with regard to project performance, this research report advises using National Water and Sewage Corporation Kabale branch in development projects.

1. The National Water and Sewage Corporation shall ensure that every employee has access to suitable technological facilities.
2. The usage of a project management information system should be adopted by all NWSC workers for the administration of their development projects. This is due to the fact that they produce the pertinent, accurate, and secure data required for the project's successful and efficient administration and decision-making.
3. The use of a project management information system is a highly crucial attribute to PMIS Users, according to the research findings. This is because better project planning, scheduling, monitoring, and control have been seen to increase the efficacy and efficiency of managerial tasks. Timely decision-making was another indicator of productivity gain. Therefore, the purchase and installation of this system software should involve all parties connected with youth polytechnics.

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APPENDICES

Appendix I: A questionnaire for NWSC staff.

The questionnaire to be administered to the respondents

I am **ABIGABA JACKSON: 2019/A/PPM/004/W** presently engaged in a research on “

Project management information systems attributes and project performance. A case of NWSC-Kabale.” I have taken the liberty of writing to you as one of the selected respondents in order to seek your assistance in acquiring information regarding your experiences relating to the research. The study is purely for academic purposes as it will enable me to acquire a Masters **of Arts in** project planning & management of Kabale University. All information will be regarded as confidential and no personal details of any respondents/student will be mentioned in the findings nor will the results be related to any particular student or University.

Thank you very much sir or madam

INSTRUCTIONS TO THE RESPONDENT

1. Please read through each statement carefully **before** giving your opinion.
2. Please make sure that you **do not omit** a question, or skip any page.
3. Please be totally **frank** when giving your opinion.
4. Please **do not** discuss statements with anyone.
5. Please **return** the questionnaire after completion.

Kindly answer **all the questions** by supplying the requested information in writing, or by making a cross (x) in the appropriate block.

SECTION 1

BIOGRAPHICAL INFORMATION

1. Gender

1.1 My Gender is		Code
1. Male		1
2. Female		2

2. Age

1.2 I belong to the age range of		Code
4 20- 24 years		1
5 25 -30 years		2
6 31- 34 years		3
7 35 - 50 years		4
8 50 and above		5

3. Level of education/ qualification studying (studied) for

1.2 My education level is;		Code
1. Certificate		1
2. Diploma		2
3. Degree		3
4. Masters		4
5. PhD		5

SECTION B

6. Do you use PMIS at NWSC? (Tick the right answer)

a) Yes b) No c) Not sure

7. From 6 above, If yes, List the PMIS used

.....

.....
.....
8. For how long have you used PMIS?

.....
.....

9. Do you think PMIS have any effect on service delivery?

Yes No

10. From (9) above, if yes, how?.....

11. Do you find it easy to use PMIS at NWSC- Kabale?

Yes No

12. From (11) above, if No, what could be the challenges?

.....
.....
.....
.....

13. Does the current PMIS at NWSC- Kabale capture all the necessary Information?

Yes No

14. From (14) above, if No, which information that is not capture?

.....
.....

15. For the question below rate the statements on effects of PMIS software on the performance of NWSC- Kabale projects by ticking in box front of the statement under options: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

SN	Statements	SA	A	D	SD
----	------------	----	---	---	----

	Effect PMIS software on the performance of NWSC- Kabale projects				
1	With the Inventory of PMIS at NWSC- Kabale improved service delivery				
2	There has been time management in service delivery due to POS systems used in billing.				
3	There is right and quick information flow at the branch				
4	Managerial decisions and future prospects are based on PMIS at the branch				
5	The use PMIS have mitigated risks on project performance.				
6	There is cost management by use PMIS like in the billing system.				
7	The available PMIS cover client's data to which we base on to ensure service delivery.				
8	Projects like extension of water lines, gravity power, servicing base on the Information managed by PMIS.				

16. For effective work of PMIS, the quality of information matters. Do you think the information captured at NWSC- Kabale is effective for the use of current PMIS?.

Yes No

17. From (16) if No, where are the gaps?

.....

18. For the question below rate the statements on Quality of information generated by PMIS and performance of NWSC- Kabale projects by ticking in box front of the statement under options: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

19. What is your personal recommendation about the quality of information captured at NWSC-Kabale branch?

.....

.....

20. Do you find it challenging in Using PMIS at NWSC- Kabale?

Yes No

21. From (20) if yes, what could be the challenges?

.....

22. For the question below rate the statements on challenges of Project Management Information System towards user satisfaction and performance of NWSC- Kabale projects by ticking in box front of the statement under options: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

S/ N	Statements on challenges of Project Management Information System towards user satisfaction and performance of NWSC- Kabale projects	S A	A	D	S D
	Humanistic Challenges				
1	The lack of information of the managers and users as they don't know exactly what they want and what their information needs are.				
2	The lack of understanding of the needs of the users by designers (the lack of correct definition of the needs and their analysis)				
3	The lack of information of the managers and users about the collaboration method with the designer team.				
4	The lack of participation of the managers and users in system design.				
5	The lack of information of the managers and users as they don't know exactly what they want and what their information needs are.				
6	The lack of understanding of the needs of the users by designers (the lack of correct definition of the needs and their analysis)				
	Organizational (NWSC) Challenges				

6	The lack of good conditions for participation and collaboration of the managers, users and system directors				
7	The lack of consistency and complexity of the existing manual systems.				
8	The lack of existing systems and methods analysis before the system design				
9	The lack of evaluation of the existing power				
10	Bad condition of educating the specialized forces				
	If others specify				

23. Do you think there has been contributions of PMIS towards performance NWSC-Kabale projects?

Yes No

24. From (23) above if yes, what could be the contributions?

.....
.....
.....

25. For the question below rate the statements on contributions of Project Management Information System use by the manager towards performance of NWSC- Kabale projects by ticking in box front of the statement under options: Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

S/ N	Statements on contributions of Project Management Information System use by the manager towards performance of NWSC- Kabale projects	SA	A	D	SD
1	PMIS at NWSC has helped in decreasing the time and cost that are required to use precise clarifications for project planning.				
2	There is easy scheduling, monitoring, and controlling with use of current PMIS at NWSC				
3	There has been project risk management with the use PMIS				
4	There is ease in monitoring and controlling the whole NWSC Kabale.				
5	Project management information systems create a database that NWSC managers need for good coordination of people and activities in projects				
6	PMIS produces information products that support many of the day-to-day decision-making needs of NWSC managers				
7	If others specify;.....				

Appendix II: Interview guide questions for NWSC clients at Kabale main branch.

I am **ABIGABA JACKSON: 2019/A/PPM/004/W** presently engaged in research on “Project management information systems attributes and project performance. A case of NWSC- Kabale.” I have taken the liberty of writing to you as one of the selected respondents in order to seek your assistance in acquiring information regarding your experiences relating to the research.

The study is purely for academic purposes as it will enable me to acquire a Masters **of Arts in** project planning & management Of Kabale University. All information will be regarded as confidential and no personal details of any respondents/student will be mentioned in the findings nor will the results be related to any particular student Or University.

Thank you very much Sir or Madam.

Section A: Demographic information

1. Location.....
2. Qualification.....
3. Years of using NWSC services: 0-5 years [] 5-10 years [] 10 years & above []

Interview Questions

- 1 Tell me about your experience with NWSC.
- 2 Do you find hard to have your issue solved at NWSC? Yes [] or No []
- 3 From (2) if yes how long does it take.....?
- 4 How do you normally contact NWSC for a service?
- 5 Is there any online system you use to have a service at NWSC? Yes [] or No []
- 6 From (5) above, If yes what is the system?
- 7 Do you find delays in service deliver like billings or fixing leakages? Yes [] or No []
- 8 From (7) if yes, how long does it take?
- 9 What challenges do you face using NWSC systems of service delivery?
- 10 Do you find it easy to pay for water bills with NWSC? Yes [] or No []
- 11 From (10) if yes, what system do you use to pay?
- 12 Have you ever filed an application to NWSC requesting for piped water? Yes [] or No []
- 13 From (12) if yes, how quick and efficient was the process?
- 14 In conclusion, are you satisfied with NWSC project management systems and would you recommend them for others?

Appendix III: Research Study Budget

S/N	ACTIVITY	COST (UGX)
1	Internet and proposal development	600,000

2	Case study field pilot study and questionnaire administering.	400,000
3	Primary data collection	400,000
4	Data analysis	200,000
5	Printing and binding	500,000
6	Laptop	1,000,000
	TOTAL	3,100,000

Appendix IV: Work plan

Activities	Months									
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Proposal development										
Proposal presentation										
Primary data collection										
Data analysis and preparation										
Printing and binding										
Dissertation Handing in.										