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LAND SURVEYING

FINAL YEAR PROJECT REPORT.

TOPIC: IMPACTS OF LAND INFORMATION SYSTEM ON LAND SERVICES DELIVERY

CASE STUDY: GASABO DISTRICT (2015 -2023).

Research proposal submitted in partial fulfillment of the requirements for the Award of advanced diploma in land surveying.

Presented by:

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Under the guidance of:

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Kigali, October 2024

DECLARATION

I, **KAZE CHRISTA Bella** do hereby declare that the work presented in this dissertation is my own contribution to the best of my knowledge. The same work has never been submitted to any other University or Institution. I, therefore declare that this work is my own for the partial fulfilment of the award ofthe advanced diploma in civil engineering department, land surveying option at ULK Polytechnic Institute.

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APPROVAL

This is to certify that this dissertation work, entitled "IMPACTS OF LAND INFORMATION SYSTEM ON LAND SERVICES DELIVERY. CASE STUDY: GASABO DISTRICT (2015 - 2023)" is an original study conducted by KAZE CHRISTA Bella under my supervision and guidance.

The supervisor's name: **Eng. SINIGENGA Alphonse**

Signature of the supervisor: ……………...........

Submission date: …………………………...

DEDICATION

This research project is dedicated to:

Our beloved families

Friends and classmates

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This Thesis has benefited greatly from substantial inputs, guidance, and comments from many people and institutions.

First of all, I would like to thank to the Almighty God for giving the wisdom and granting me resources whether financial or non-financial that have made a great contribution to this research project and my education in general.

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May God bless you all!!!

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ABSTRACT

The general objective of this study were to explore the impacts of land information system on land services delivery. Case study of Gasabo district (2015 -2023). Specific objectives were to identify the benefits of land information system in Gasabo district, to identify the land administration services available in Gasabo district and to determine the influences of land information system on land services delivery in Gasabo district. Simple random sampling technique was applied to select households for the sample size of 100 respondents from the whole population of the study area in Gasabo district. Both primary and secondary data; primary data were gathered using questionnaires, interview and focus group discussion while secondary data were gathered using documentation review. The data were analysed using SPSS software version 22 and they were presented using frequency table and percentages. The study found out that From the results of objective one which was to identify the land administration services available in Gasabo district. For this objective, researcher conclude that, the benefits of land information system in Gasabo district were Assisting in land use planning and more revenue through taxes, Supports the easy access of land information, Supports land use planning implementation, Supports master plan implementation, Enhance accuracy and transparency in land administration services, Easy for ensuring efficient and effective land use planning implementation, and Land services got quick and people easily access land services, It supports property taxation, It helps efficient and effective land market, It Helps in monitoring the land use planning implementation, It is easy and quick land transactions process by the help of LIS, LIS reduces illegal land ownership transfers and It assists in mortgage.

From the results of objective two which was to identify the land administration services available in Gasabo district, it was concluded that; land transactions, land information records, land disputes resolution, and land property taxation are the land administration services available in Gasabo district.

From the results of objective three which was to examine the influences of land information system on land services delivery in Gasabo district, it was concluded that; the influences of land information system on land services delivery in Gasabo district were land information system provides the necessary information required for making the land use planning successful, land

information system facilitates masterplan decision making in regards to master plan projects, land information system helps landowner to easily access information regarding masterplan and land use planning, land information system facilitates to monitor status of the master plans implementation, land information system provides land information that can be used for land use management process, land information system provides means to monitor land use management activities implementation, land information system offers means to change or modify the occurred changes in the existing land uses in relation to land use management, land information system makes easy mutation after sales, land information system helps to remove cost associated with printing land administration documents, land information system promoted quick land service delivery, land information system removed issue of lost or damaged land title, land information system promoted zero trip and zero paper and land information system promoted smooth access financial services.

Keywords: Land Information System and land administration service delivery

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURE

LIST OF APPENDIX

LIST OF SYMBOLS, ABBREVIATIONS AND ACRONYMS

% : Percentage

GOR: Government of Rwanda

LIS: Land Information System

LAS: Land Administration System

LAM: Land Administration and Management

NISR: National Institute of Statistics of Rwanda

SPSS: Statistical Package for Social Sciences

DLUP: District Land Use Plan

ELU: Existing Land Use

GIS: Geographical Information System

KCMP: Kigali Conceptual Master Plan

MP: Master plan

NLUDMP: National Land Use Development Master Plan

ULK: Kigali Independent University

UPI: ULK Polytechnic Institute

HoD: Head of Department

CHAPTER ONE: GENERAL INTRODUCTION

1.0. Introduction to the study

The study is about the impacts of land information system on land services delivery. Case study of Gasabo district (2015 -2023). This chapter of general introduction is taken as a research proposal and it provides the background of the study, statement of the problem, purpose of the study, objective of the study, research questions/ hypothesis, scope of the study, significance of the study and lastly the organization of the study.

1.1. Background of the study

A land Information System is a geographic information system for cadastral and land-use mapping, typically used by local governments (Acheampong, 2018). The components of land information system are the Survey Database, the Digital Cadastral Database and the Topographical Database and the Legal/Fiscal database. Land information system is a decision-making tool that creates, visualizes, analyzes, reports and publishes land-based data such as parcel information, zoning, land use, ownership and general property information (Biraro, 2014). Land information system is responsible for reliable land information necessary for many public programs: land planning, infrastructure development and maintenance, environmental protection and resource management, emergency services, social service programs and so forth (Yirsaw et al., 2016)

Land Information System provides a base for land markets, development, and other economic activity (Somers, 2006). A land Information System (LIS) consists of an accurate, current and reliable land record cadaster and its associated attribute and spatial data that represent the legal boundaries of land tenure and provides a vital base layer capable of integration into other geographic systems or as a standalone solution that allows data stewards to retrieve, create, update, store, view, analyze and publish land information (Metternicht, 2017). Land Administration Information System is a web-based land registration tool developed in Rwanda in order to; ensure a proper land management and land administration and specifically the maintenance of land certificates issued to landholders during land registration.

Land service delivery refers to the process by which a land administration organization delivers its services to the public (Bruce, 2014). Land related services are delivered at national and provincial levels by National Land Authority (NLA), by District One Stop Centers at District level and Sector Land Managers at Sector level. Each institution involved in the process plays its role to meet expectations of the clients applying for different services (Silberstein & Maser, 2000).

The service delivered by land administration may include the following major aspects: the management of public land, the recording and registration of private rights in land, the recording, registration and publicising of the grants or transfers of those rights in land through, for example, sale, gift, encumbrance, subdivision, consolidation, the management of the fiscal aspects related to rights in land, including land tax, historical sales data, valuation for a range of purposes including the assessment of fees and taxes, and compensation for State acquisition of private rights in land (Kalumba et al., 2018). Land service delivery may be defined as an aspect in which land services is offered to people. Also, land service delivery can be defined as the process of giving land service to the public(Enemark et al., 2014). Land information system contributed to get information on current owners of land, previous and current use of land (Thuo, 2013)

In Australia, since "land administration" is the responsibility of the States in Australia, most activities in the Land Information System area have been traditionally undertaken and initiated by the respective state governments (Grover et al., 2017). In Australia, there are over 30 local government organizations which are committed to a LIS strategy. In general, these organizations manage up to l00, 000 parcels with populations of up to 500,000 persons. The systems vary greatly in sophistication and design. Some have a strong emphasis on land information management, financial management, corporate planning and land administration, while others emphasize graphics and CAD. Some systems are only textual or graphic, while others are a combination (Metternicht, 2017).

In Uganda, The Government of the republic of Uganda, specifically the Ministry of Lands, Housing and Urban Development (MLHUD) has achieved remarkable success in the implementation of the National Land Information System (NLIS) to date with support from Uganda government and the World Bank. Uganda is recognized as leader in the modernization of land governance. National Land Information System (NLIS) has already made a profound

contribution to the improvement of service delivery across the land sector with a substantial reduction in the time required for land transactions (Gwaleba, 2019).

In Rwanda, The Government of Rwanda has established a National Land Registry through a wide Land Tenure Regularization Programme that commenced in July 2009 (Ngoga, 2019). The Registry holds all land records encompassing land ownership information and other vital information benefiting both landowners and anyone who needs to make a commitment over a given piece of land. The Land Information system was established by National Land Authority to help land owners, citizens, organizations and investors to assess easily land information to confirm land ownership, to check the land area, land use and the planned use, to verify whether a parcel has any restriction or a mortgage registered against it, if there is an ongoing transaction on the parcel (Alerts, 2015).

In Rwanda, providing good service delivery to the public is the theme for all government and private institutions (Sagashya, 2004). As a result, Rwanda set out to provide land laws and policies that enhance good land service delivery (Reverien, 2017). Through the wide ranging program initiated by the Rwandan government between 2008 and 2012 to map and title land parcels for the entire country has played an important role in improving land administration service delivery and reducing corruption risks. The reform process did not stop with the land titling program and since 2012 the Rwanda Land Use and Management Authority has been grappling with the challenge of maintaining land service. This has required extensive training of officials and campaigns to raise awareness around the land registry system. After the land tenure regularization program, the improved land information system was born with the aim of delivering good services to public (Enemark et al., 2014).

The 2019, National Land Policy provided general guidance on a rational and efficient land administration service delivery (POTEL & Gloria, 2022). The policy was developed to address land-related challenges and offer better land information system through land administration service. Currently, land administration service delivery in Rwanda is efficient since the land information system has used by both land administration and landowners for disseminating and assessing land related services. Now it is very easy for every Rwandan to access land services

through land information system. This has improved economic of the country through more land transactions and land markets (Ntihinyurwa et al., 2019).

1.2. Problem statement

Before 2013, land service delivery was in bad shape since the land administration was not decentralised and people had only to go to the district office to get land services (Sagashya, 2004). In addition, there were land administrators who provided bad service to public and Government of Rwanda especially the body in charge of land service delivery in Gasabo district struggled to find information on land intended to be used for proper land use activities. It was also very hard enough to obtain information on who owns a land so that they can be advised on the intended use in the Gasabo district. All of the mentioned above issues caused overall less land-based development, delayed and failure of land service delivery activities that could benefit large population of the Gasabo district. In addition, since there was no good land service delivery, this resulted in less development of land and improper land use since the land services were not good enough to provide and monitor land uses.

Rwanda aimed to provide the public with a land information system for better land service delivery. Consequently, the government of Rwanda established a land information system through land administration as means of ensuring efficient and effective land service delivery (Bizoza, 2021). Even if the government of Rwanda established land information system through land administration as means of ensuring efficient and effective land service delivery. A little is known whether the intended goal was achieved through land information system. It is in this regard this study intends to assess the contribution of land information system in supporting service delivery in Rwanda especially in Gasabo district. The results that will be obtained will give the clear picture regarding impact of land information system in supporting land service delivery in this district.

1.3.Purpose of the study

The general purpose of this study is to examine the impacts of land information system on land services delivery. Case study of Gasabo district (2015 -2023). This study was undertaken in partial fulfilment of the requirements for the award of advanced diploma in land surveying.

1.4. Objective of the Study

1.4.1. Main objective

The general objective of this study was to explore the impacts of land information system on land services delivery. Case study of Gasabo district (2015 -2023).

1.4.2. Specific objectives

The specific objectives of this project are as follows:

a) To identify the benefit of land information system in Gasabo district
b) To identify the land administration services available in Gasabo district
c) To determine the influences of land information system on land services delivery in Gasabo district

1.5. Research questions

Based on the project's serviceability and functionality, answers to the following research questions will be offered in order to fulfill the above particular objectives.

a) What are the benefits of land information system in Gasabo district?
b) What are the land administration services available in Gasabo district?
c) What are the influences of land information system on land services delivery in Gasabo district?

1.6.Scope of study

This study will be delimited in terms of space, time, content and domain. Geographically, this study will be limited to Gasabo District, because the researcher believes to get relevant information concerning the topic under research. In addition, the study covers a time scope from 2015 to 2023, this time scope of eighty years is adequate to help the researcher to answer research questions, achieve specific objectives and come up with suitable conclusion. In terms of domain, this research will be delimited in domain of land surveying. In terms of content, this research will assess the impacts of land information system on land services delivery.

1.7. Significance of the study

This study will help the researcher to get useful knowledge and competencies on the impacts of land information system on land services delivery especially in Gasabo district and to deeply match the skills from research methodology and practical research. This study will help the researcher to acquire advanced diploma in land surveying at ULK Polytechnic Institute. In addition, after submitting this research project in ULK Polytechnic Institute main library, it will provide helpful information and an added knowledge to existing literature in that area to the academic community including students, lecturers and other interested readers. The findings of the research and the supportive references materials will serve as a source of baseline information for future researchers in the same domain. Therefore, the study will serve as guide to   Government bodies, especially the body in charge of land information system and land services delivery in Gasabo district will use this work for future decision making regarding the same matter.

1.8. Research methodology

This study will use primary and secondary data. Primary source data will be used through interview, questionnaires and observation directly from the field amongst people, who own land residing in Gasabo district, as well as the secondary source data through the data stored in district, sector offices and the data that will be recorded in different books and other related documents will be applied. Sample within this research will be selected using simple random sampling technique where the members for a sample will be selected randomly. Furthermore, SPSS software version 22 will be used to analyse the data in order to complete this research.

1.9. Organisation of the research

This work consists of five chapters, where chapter one will be the general introduction, which comprises the introduction of the study, background of the study, problem statement, purpose of the study, the objectives of the study, research questions, scope of the study, significance of the study and the organisation of the study. The second chapter will be the literature review, which will be about the general understanding of the reviews of other researchers with the related studies. The third chapter will be the research methodology and it will focus on the methods and materials

to be used to achieve the objectives of the study. The fourth chapter will be the results and discussions and it will be the most important one because it will show the presentation of the results acquired. The fifth one, which will be the last chapter, will cover the conclusion and recommendations with respect to the predefined objectives.

CHAPTER TWO: LITERATURE REVIEW

2.0.Introduction

This section of the study explains the definitions of the key terms and included the theoretical frameworks related to this research. Under this chapter, the researcher reveals the work done by the previous researchers, scholars and authors basing on the specific subject under study. These may be found in textbooks, journal on Internet literatures and other published documents relevant to the variables under study. This chapter is about literature review and it consists of the following: definition of the key terms, theoretical review of land information system, land service delivery and the influences of land information system on land service delivery in Gasabo district.

2.1. Definition of key terms

The main key terms to be defined includes: land information, Land information system, land use, land use management. These definitions are provided in order to enable different readers to get a good understanding on variables under study.

2.1.1. Land

Land is among the important factors of production in Rwanda and a key driver of economic activities given that 85% of the working class citizens live on agricultural activities, contributing 31% to the, National Gross Domestic Product. Law N° 27/2021 of 10/06/2021, governing land in Rwanda, article 2 (24º) defines land as a field, a plot or a farm located in a known geographical area and with boundaries, including its airspace, the objects underground, the surrounding biodiversity, structures and developments on that surface (Daley et al., 2010).

The UNCCD defines land as "the terrestrial bio productive system that comprises soil, vegetation, other biota, and the ecological and hydrological processes that operate within the system. (UN-Habitat, 2008). In a narrow sense, land can be considered as the surface of the earth but, in a broader sense, it not only covers the surface of the earth, but also anything underneath and above the surface, buildings and plants attached or fixed on the surface and the area covered by the sea (Kushoka, 2011).

Also, Land is defined as an area of the surface of the earth together with the water, soil, rocks, minerals and hydrocarbons beneath or upon it and the air above it. It embraces all things which are related to a fixed area or point of the surface of the earth, including the areas covered by water, so including the sea (Singer, 2000). Land also is referred to as a dry land or the sold surface of the earth that is not permanently covered by water, and most of human activities throughout the history has been occurred in land area that support agricultural and residential with the other various natural resources (Musembi, 2007).Traditional economic says that land is a factor of production, along with CapitaLand labour (Donnelly, 2012).

Land is a fundamental resource without which life on earth cannot exist. It provides space and materials for the existence of all living beings. Access to land is very important for human beings as it provides shelter and the means for their livelihood.The availability of land is the key to human existence, and its distribution and use are of vital importance (Adekola et al., 2021). In legal terms, it is an immovable and permanent asset inclusive of rights associated with surface of the earth from centre to the infinity of sky (Bisoka, 2020).

Land is a major source of wealth. It accounts for 50 to 75 per cent of the national wealth in many developing countries. An estimated 20 per cent or more of Gross Domestic Product (GDP) of any nation comes from land, property and construction. It provides the foundation for most economic activities. Fundamental needs of human beings like shelter, food and clothing are fulfilled from land. Thus, the allocation, use and management of land are vital for society (Olaya, 2009). Although land is part of man's natural heritage, access to land is controlled by ownership patterns. Land is partitioned for administrative and economic purposes, and it is used and transformed in a myriad of ways (Fischer et al., 2014).

2.1.2. Information
Information is an abstract concept that refers to that which has the power to inform, Information is often processed iteratively, data available at one step are processed into information to be interpreted and processed at the next step (Bashar & Babangida. , 2022). The concept of information is relevant in numerous context including communication, control, data, form, education, knowledge, meaning, and understanding (Smith, 2008). Information can be transmitted in time, via data storage, and space, via communication and telecommunication, Information is

expressed either as the content of a message or through direct or indirect observation, That which is perceived can be construed as a message in its own right, and in that sense, all information is always conveyed as the content of a message (Larsen, 2005).

Information is measure of possible choices of messages contained in a symbol, signal, transmitted message, or other information-bearing object; Information usually quantified as the negative logarithm of the number of allowed symbols that could be contained in the message (Hartley, 2006). The smallest unit of information that can be contained or transmitted is the bit, corresponding to a yes-or-no decision (McEliece, 2006). In addition, information can be any fact or set of facts, knowledge, news, or advice communicated by others or obtained by personal study and investigation; any datum that reduces uncertainty about the state of any part of the world; intelligence; knowledge derived from reading, observation, or instruction (Ogbonna et al., 2022).

2.1.3. System

A system is a collection of elements or components that are organized for a common purpose (Johnson, 2021). A system is a group of interacting or interrelated elements that act according to a set of rules to form a unified whole (Sillitto et al., 2017). A system surrounded and influenced by its environment is described by its boundaries, structure and purpose and expressed in its functioning (Anton et al., 2009).

2.1.4. Land information

Land information is a prime requisite for making decisions related to land investment, development and management. Land information is component of GIS or vice-versa. a long-standing debate, mostly a matter of semantics and disciplinary orientation (Ventura, 2012)**.** Land information means any physical, legal, economic or environmental information or characteristics concerning land, water, ground water, subsurface resource or air in this state. Land information includes information relating topography, soil, soil erosion, geology, minerals, vegetation, land cover, associated natural resources, land use, land use controls and restrictions, jurisdictional boundaries, tax assessment, land value, land survey records and references, geodetic control networks, aerial photographs, maps, planimetric data, remote sensing data (Enemark, 2004).

2.1.5. Land information System

A Land Information System is essentially a computerized tool for legal, administrative and economic decision making for land use planning and development. It consists of a structured database with spatial referenced land related attributes and spatial data for a defined area as well as procedures and techniques for systematic collection, processing, updating and distribution of the data to aid in solving land management problems. Land information system" (LIS) has increasingly been used worldwide to describe the management of spatial data of all forms in a government context (Kumar et al., 2006).

Land Information System (LIS) is a "tool for legal, administrative and economic decision making and an aid for planning and development which consists of a database containing spatially referenced land related data for a defined area and of procedures and techniques for the systematic collection, updating, processing and distribution of that data (Dawidowicz, 2014).

2.1.6. Land services

Land services refers to all land related services offered through land administration at sector level or district such as land registration, land transaction, mutation, land management and land disputes resolution. This kind of service provide guidance enhance proper land use and gives means of protecting land rights of landowners (Williamson et al., 2010).

2.1.7. Land services delivery

Land service delivery refers to the process by which land services are provided or offered to the public. Land service delivery includes procedures and methods by which land services is delivered to the public. Good land service delivery aims at giving citizens good services on time, in effective and efficient way (Reverien, 2017). The purpose of the land service delivery policy is that all citizens enjoy the equal right of access to land, in principle of women married or not should not be excluded from the process of land access, and for land acquisition (Lemmen et al., 2015).

2.2. Theoretical review of land information system
2.2.1. Land information system in other countries

In China, the construction of land information system started in 1990s, very late in China compared with that in western developed countries. However, land information system spread to the whole

country very fast. Especially, the implement of "Golden Land" and "Digital Land" projects launched by the Ministry of Land and Resources of China greatly accelerated the extension of land information system to the local land administrations. Land data is the blood of land information system. Without it, land information system cannot work (Zhao, 2010).

Before the Bureau of Land Management of China (now the Ministry of Land and Resources) was constituted in 1986, China had no detailed land use information, especially land property data. Therefore, China launched a project of the first investigation of land and resource (FILR) from 1984 in order to know temporal status of land uses in the country. The project has been carried out for more than 10 years, and ended in 1996 (Lin & Ho, 2005). Due to the limitation of technology in that time, most of the productions of the project are preserved in papers, which cannot be directly used by land information system. Therefore, from late of 1990s, land administration began to digitize the productions of FILR into computers. Meanwhile, land information system was equipped in many of counties. By now, some systems are still working for thematic land management (Zhao, 2010).

In Anambra State Government of Nigeria developed and started the use of the Land Information System commonly referred to as ALIS hoping to reduce corruption, delays in title registration and enhanced internal revenue generation from state land management (NWOKIKE, 2019).Kenya has created an online platform known as Ardhi Sasa for accessing land data and carrying out paperless transactions that are easy, secure, cost effective, efficient and transparent. This will boost service delivery and eliminate paper records that breed and catalyze corruption and fraud (Wanjohi, 2015).

In Uganda, The DeSINLISI Project has been undertaken for designing, supplying, installing a Land Information System (LIS) and securing land records. A World Bank Loan has been granted for implementing the LIS within the Ministry of Lands, Housing and Urban Development (Wabineno et al., 2011). In Nepal, in 1993 government introduced information technology in land administration in Nepal. A unit called Central Integrated Land Information System was established within the Department of Land Revenue under the Ministry of land reform and Management (MLRM) (Dangol, 2012).

2.2.2. Land information system in Rwanda

In Rwanda, The Government of Rwanda has established a National Land Registry through a wide Land Tenure Regularization Program that started d in July 2009 (Ngoga, 2019). The Registry holds all land records encompassing land ownership information and other vital information benefiting both land owners and anyone who needs to make a commitment over a given piece of land (Banerjee et al., 2020). The Land Information system was established by National Land Authority to help land owners, citizens, organizations and investors to confirm land ownership, to check the land area, land use and the planned use, to verify whether a parcel has any restriction or a mortgage registered against it, if there is an ongoing transaction on the parcel (Bizoza, 2021). Currently, in Rwanda all land transactions and decision makings are made based on the land information system.

Be either land use planning projects or land taxation have been success since Rwanda adopted the land use information system (Ngoga, 2019). Collection. The land disputes were minimized since LIS was adopted now neighbors live in harmony without the land quarrels. one cannot forget the great role of the land information system in the making of the national land use and master plan of 2010.Land information system enhanced better land taxation and improved the Rwandan economic growth based on land investments that increased after the land information system (INGABIRE, 2019).

2.2.3. Impacts of land information system

The benefits of land information systems are many and varied. In analyzing the benefits, it is best to look at urban and rural areas separately, both of which have economic, social and environmental benefits (Williamson., 2013).

2.2.3.1. Economic impact

Simply, appropriate land information systems contribute to cities running more efficiently, ensure adequate taxes are raised, contribute to improved services and generally lead to cities being able to better play their usual role of being the engines of economic growth in the country (Nkambwe, 2011). Also, the efficient land information systems in cities supports economic growth, primarily through assisting in better planning and more revenue through taxes. This leads to an improved urban environment as a consequence of improved transportation, sewerage, water, drainage,

electricity and telephone services. A well-functioning land information system with all its component parts is essential for orderly urban growth, a dynamic private sector and an efficient housing finance sector (Williamson., 2013).

2.2.3.2. Social impact

The land information system provides the information about the legal recognition of property rights that is, rights of exclusive use and control over land. It gives owners incentives to use resources efficiently. Without the right to exclude others from their land, farmers do not have an incentive to plough, sow, weed and harvest. Without land tenure, they have no incentive to invest in irrigation or other improvements that would repay the investment over time. Efficiency can be further served by making property rights transferable (Alden Wily, 2018).

In most countries' real estate accounts for between half and three quarters of national wealth. If ownership is widely dispersed, tenure is secure, and title transfer is easy, real estate can be good collateral for nearly any type of lending. Actually, the land information system supports the easy access of land information which on the other hand make it easy for the land owner to get loans and mortgage the land since bank wouldn't otherwise give loan to insecure land as collateral. One key to a smoothly functioning land information system is land registers supported by cadastral surveys (Alden Wily, 2018).

2.2.3.3. Environmental impact

In addition to what stated above, improved land information systems can lead to significant improvement in the rural environment through improved agricultural practices which contribute to better use of the land, protection of forests and particularly a reduction in destructive slash and burn practices of rural squatters (Williamson., 2013).

2.2.4. Challenges of land information system

There are three main limiting factors on these systems being implemented successfully in the long term (Dalrymple et al., 2003). Developing countries faces many challenges while they are implementing the land information system (Bates, 2006). The mainly challenges faced by land information system are: First, lack of enough funds to but tools and methods of land information system implementation is one reasons many countries still hesitate to adopt its use. Second, an

education system where the complexities of the land related problems and the technologies associated with Land Information System can be understood and taught. Third, institutional arrangements in government which can provide the coordination and support for the adoption of the concepts and associated technologies (Bernhardsen, 2002).

The first challenge is the lack of enough funds, lack of funds challenges many countries hence they are financial incapable able of affording the tools, methods and training to develop and implement the land information system (Ventura, 2012). This results in being stuck to the manual analogy methods of land information. The parties that affected the most is the public who in results get the bad services (Zhao, 2010). The second is the lack of appropriate institutional arrangements in government to coordinate, manage and give leadership and monitor the implementation of land information system. How is implemented, what is it contributing, what can be improved. All of those things which are not well monitored result in the fail to implement and use the land information system. (Weaver, 2010).

The third is the lack of strong educational base to provide the academic skills and technics regarding the land information systems. The lack of that kind of knowledge results bad services offered to the public when they run to land officers in hope of solving their problems through land information system. Without addressing these two issues the development of land information system in the long term will be more a dream than reality (Weaver, 2010).It has been argued that land information systems are essential in the developing world to support economic development and environmental management. The weakest link in developing such systems in both developed and developing countries is education and training. Any program to develop LIS or reform the LIS should have a major education component (Hallam, 2004).

Since education tends to require a long-term commitment many countries only give "lip service" to such initiatives in preference to buying computer systems which they believe will solve their economic and environmental problems. Nothing is further from the truth. A commitment to education is essential if a serious commitment is to be given to LIS reform (Miwa, 2006).

2.3. Theoretical review of land services delivery

2.3.1. Land services delivery in other countries

In Pakistan, When visiting a land services official, a staggering 75 percent of households reported long distance to reach to land service offices and the risk of losing their land title which takes long time to get replacement, according to World Bank report(2016). Over half of households said they got good land services near them in the 2021. Lack of enough access to digital land information makes draws back the good land services in Pakistan. A new initiative is now attempting to rebuild that trust by introducing digital access to land service allowing citizens to easily access land related services and reduce the distance travelled by people in search of land related services. The World Bank report of (2021), found that after provision of digital land services via computer based customer care robots and people, the land service delivery has improved.

In Tanzania, land service delivery is decentralized to village level whereby the Village Councils (the lowest level of local government that is directly elected by villagers), are designated as Land Managers under the Village Land Act 1999 (POTEL & Gloria, 2022). This facilitates the public to get good services nearby them. The current land service delivery in Tanzania grants land title via rural land titling programs even though often there is perceived risk of land alienation and dispossession among the poor (Barton, 2009). The land service delivery in Tanzania is improved and quick as citizen easily access them at their local village level.

In Kenya, The Ministry of Lands and Physical Planning is committed to courtesy, efficiency, accountability and transparency in land service delivery. This is why, The Kenyan government established service charter displayed in both Swahili and English at all land service offices as the tool ensure that only good land services are delivered to citizen (Meru & Kinoti, 2022).

2.3.2. Status of Land services delivery in Rwanda

In Rwanda, providing good service delivery to the public is the national theme for all government and private institutions (Sagashya, 2004). As a result, Rwanda set out to provide land laws and policies that enhance good land service delivery (Reverien, 2017). Through the wide ranging program initiated by the Rwandan government between 2008 and 2012 to map and title land parcels for the entire country has played an important role in improving land administration service

delivery and reducing corruption risks. The reform process did not stop with the land titling program and since 2012 the Rwanda Land Use and Management Authority has been grappling with the challenge of maintaining land service. This has required extensive training of officials and campaigns to raise awareness around the land registry system.

After the land tenure regularization program, the improved land administration was born with the aim of delivering good services to public (Enemark et al., 2014). The 2019 National Land Policy provided general guidance on a rational and efficient land service delivery (POTEL & Gloria, 2022). The policy was developed to address land-related challenges and offer better land administration service. Currently, land administration service delivery in Rwanda is efficient since the land administration have been decentralized at sector Level.

Every Rwandan can access land administration services near his residence. This has improved economic of the country through more land transactions and land markets (Ntihinyurwa et al., 2019). Furthermore, land services offered in Rwanda includes land registration, land transfers, the land markets, land disputes resolution and land transactions which are made legal with the help of land administration officer, the good land service delivery has enabled the government to get more increased land investments (Augustinus, 2006).

2.3.3. Impacts of land service delivery

The impact of land service delivery as discussed below are security, improve land market, supports urban planning and land management, supports land taxation and land disputes resolution.

2.3.3.1. Security

Land service delivery offers security of land through land registration, unregistered land is at a higher risk of fraud. Fraudsters can assume your identity and attempt to sell or mortgage your property without your knowledge. Registration helps you to protect your property from fraud and resist any third party applications for adverse possession, commonly referred to as "squatter's rights (Qu et al., 2015).

2.3.3.2. Improve land market

Land service delivery enables land transactions to be legal and free of scams and fraudulent which makes it easily develop and grow. Land service delivery enables the person who buys land to get the land title of his new bought land not to mention that it provides the valid land information for land to be sold. Land service delivery makes it easier for conveyancers to ascertain who owns the property and what benefits and burdens are attached to the land (Lemmen et al., 2015).

2.3.3.3. Supports land management and urban land use planning

Land service delivery enables proper land management by keeping records of who owns land, what rights he possess and the size of land. With this information land service delivery facilitate the stake holders to make informed decisions in regards to local or urban land use planning and helps citizens to know the proper use of their land (Williamson, 2001).

2.3.3.4. Supports land taxation

The land service delivery allows the government to have records of all registered land which empower it to be able to collect the land tax. With land ta, the country gets to make the common interest development projects such as the provision of infrastructures and health care for all (Holden et al., 2010).

2.3.3.5. Land disputes resolution

In addition, the land service delivery plays crucial role when it comes to land disputes resolution as the registered title to the property will also be provided with a title plan which provides evidence of the extent of the property. This makes it easier for a neighbors to identify the boundaries of their property and check that their understanding of the extent of the property is the same as shown on the title plan. Land service delivery also provides a state-backed guarantee securing the title to the property, meaning that the state guarantees that the legal estate is vested in the registered land (Barton, 2009).

2.3.3.6. Facilitate rural land reform

The distribution of land to the landless, and the consolidation and redistribution of land for more efficient use all require detailed records of the present ownership and use of the land which is offered by land administration service delivery. Compensation may need to be paid to those who lose out in such a process, or money may be taken from those who make special gains. The design of new patterns of land ownership to provide greater productivity from the land can be effective only if the existing pattern is well documented (Williamson, 2001)

2.3.4. Challenges faced by land service delivery

The institutions charged with land service delivery face a range of challenges and constraints that hamper the effective delivery of land services to citizens (Nwuba & Nuhu, 2018). These challenges include, but are not limited to, hierarchical and outdated organizational structures which still use paper based land information resulting in loss or damage, bureaucratic processes which takes too long to offer land service as quick as possible to citizen mainly triggered by less computer literacy or insufficient funds to buy equipment's that could speed up process of offering land related services, and high costs and fees for service for instance, land registration fees is expensive for most people in many African countries resulting in less land registration which poses threat to proper land service delivery (Kaczorowska, 2019).

Taken together, these constraints ensure that only a small percentage of the population is engaged with the formal land sector that is supported by LAS which is the baseline for land service delivery. Because of the bureaucratic nature and cost of the current land registration, there is still presence of unregistered land which has no formal property title making it difficult for land service offices to get their information. The long and expensive land registration process damages the business environment and disproportionately affects women and low-income groups (Ali et al., 2021).

This creates major roadblocks to the country's economic development. The failure to register property ownership also has consequences for governance, growth, and development. For example, lack of proper title makes it difficult for people to use their land as collateral, which in turn reduces their access to finance (Rojnic, 2022). The lack of a coherent system for recording land ownership leaves the government be it federal, state, or local with little knowledge about who owns what, in which area, or how the land is used. The presence of customary certificates of

occupancy, has been subject to different interpretations in different countries primarily because it did not repeal the existing land laws (Payne et al., 2009).

2.3.5. Land services available in Gasabo district

The land services available in Gasabo district are land registration, land transactions, land taxation, land disputes resolution, Land use management and so on.

2.3.5.1. Land registration

In Gasabo district, the land registration is one of the services offered by land service delivery. Land registration is any of various systems by which matters concerning ownership, possession, or other rights in land are formally recorded to provide evidence of title, facilitate transactions, and prevent unlawful disposal. In addition, Land registration is the official recording of legally recognized interests in land and is usually part of a cadastral system (Sagashya, 2004).

2.3.5.2. Land transactions

For any land transactions in Gasabo district to be legal, it has to be overlooked by the land office allowing it to be free of frauds and scammers. Land transaction is simply the process taken once you have decided to purchase real property (Reverien, 2017).

2.3.5.3. Land taxation

land taxation is an important source of income for local governments, The Gasabo district extends its land services through the land taxation as it has the information of land owners, use and rights of land, makes it a lot easier to collect the land tax owed by land owners (Badege, 2020).

2.3.5.4. Land disputes resolution

In Gasabo district, it has been found that the land disputes have reduced due to the presence of land service offices. With the presence of relevant information on the land and the land title showing the extent of land boundaries. It becomes a lot easier to solve the land disputes in Gasabo district. The process of registering land rights prevents land disputes arising in the future, since at the time of first registration formal procedures is followed as the tool that will resolve uncertainties (Islam et al., 2015).

2.3.5.5. Land use management

Land service offices in Rwamagana sector strive to ensure the proper land use management. Land use management is the process of regulating the use of land by a central authority. Usually, this is done to promote more desirable social and environmental outcomes as well as a more efficient use of resources (Augustinus, 2006).

2.4. Status of land related service delivery before the provision of land information system

The status of land service delivery before the provision of electronic land title was characterized by high cost of printing land title, Lack of easy access to mortgage and Lost or damaged land title.

2.4.1. High cost of printing land title

Land related service delivery before the provision of e-land title was not good because The issuance of land titles has always been done only in non-digital format namely on printed certificates which is costly due to high printing expenses, paperwork and security of the titles especially possibility of fraud as well as loss of title which needs to be replaced at additional charges and time constraints associated to the request of the replacement of title procedure (Akumuntu, 2022).

2.4.2. Lack of easy access to mortgage

This manual printed land title made land service delivery ineffective because One of the most important triggers for the provision of land service delivery office was that Rwanda wanted to develop proper land governance and administration program that will enable the population to have a secure form of tenure and bring about proper land utilization, efficient land management, generate taxation income, regulate land market and most importantly, allow landowners to use the registered land as collateral to gain access to finance for their self-development (Reverien, 2017). Every time a landowner needs to apply for financial and other services is asked to present the proof of ownership, which is the land title, and for this, they have to make sure their keep the acquired titles safely and avoid their loss and damage as whenever the land title got lost or damaged it was very hard to get loans (Potel, 2018).

2.4.3. Lost or damaged land titles

Before the provision of the e-land title land service were characterized by the lost or damaged land titles as archiving of important hard copy documents is concerned. Normally once a land title is

lost or damaged, the holder has to apply for replacement. This is the most complicated application as people have to go through long process from making announcements on public radio station and wait for 14 days before they go to the notary and take oath by signing forms related to this application and wait for 7 working days to get a new title (Badege, 2020).

2.5. Status of land related service delivery after the provision of land information system

After the provision of electronic land title, the land service delivery was improved since the cost spent on printing land title has been removed, the risk of lost or damaged land title was minimized, quick process of obtaining land title and the e-transactions were initiated.

2.5.1. Cost spent on printing land title removed

With e-land title, there is no need to print hard copies of land title, thus the cost spent on those printing got removed as the owner can now have their e-land title on smartphones, computers, email and any other electronic devices without any difficulty. In addition, e-land title removed the money spent on transport of people who travelled long distance to reach to the sector or district to pick their printed land title (Akumuntu & Potel, 2022).

2.5.2. The risk of lost or damaged land title become minimized

The issue the e-Title would address is the lost or damaged land titles as archiving of important hard copy documents is concerned. Since any landowner has the link to his e-land title, there will be no risk of lost or damaged land title and in any case, the owner unknowingly delete his e-title, he will not need to apply for it again. Since it is digital, he will just download it again which will improve land services in all aspect and encourage land development as well (Akumuntu, 2022).

2.5.3. Quick process of obtaining land title

The process of obtaining e-land title is quick and easy which made land service delivery reliable and quick as normally people spent money on service fees, transport and take time to wait for the hard copy land title but as the e-title is all electronic. The process is easy and quick making the citizen feel happy for getting such good land service (Badege, 2020).

2.5.4. Land transactions were developed as the e-conveyancing was initiated

The land service of land transaction got even better with e-land title, the e –conveyancing is possible, where by land transactions can happen on land with valid e-land title and then the new

owner is privileged to get easily registered as the new of land he bought easily by just updating data on e-land title in no time (Akumuntu, 2022).

CHAPTER THREE: RESEARCH METHODOLOGY

3.0.Introduction

This chapter consisted with the presentation of the study area, the research design, source of data collection such as primary and secondary data collection, data collection instruments which was the questionnaire, interview and documentation, the study population, sampling technique, sample size, data processing and analysis.

3.1. Presentation of the study area

Gasabo is a district in Kigali city, the capital of Rwanda. The headquarter of Gasabo is located in Remera Sector. The district is the location of the Gisozi Genocide Memorial Site, the burial place of approximately 300,000 victims of the 1994 Genocide against Tutsis. In addition to the cemetery, the memorial has a related genocide exhibition area and library and has plans to develop a teaching center on the history of the genocide.

Gasabo district is one of thirty districts in all of Rwanda and one of three districts in Kigali city. The geographical coordinates of Gasabo district are: 1°53'04.9"S and 30°07'53.1"E (latitude - 1.8847000° and longitude 30.1314100°). This sector is composed with 15 sectors including Bumbogo, Gatsata, Jali, Gikomero, Gisozi, Jabana, Kinyinya, Ndera, Nduba, Rusororo, Rutunga, Kacyiru, Kimihurura, Kimironko and Remera. This sector has 879,505 populations; 2,049/km² population density and 429.2 km² area (NISR, 2012).
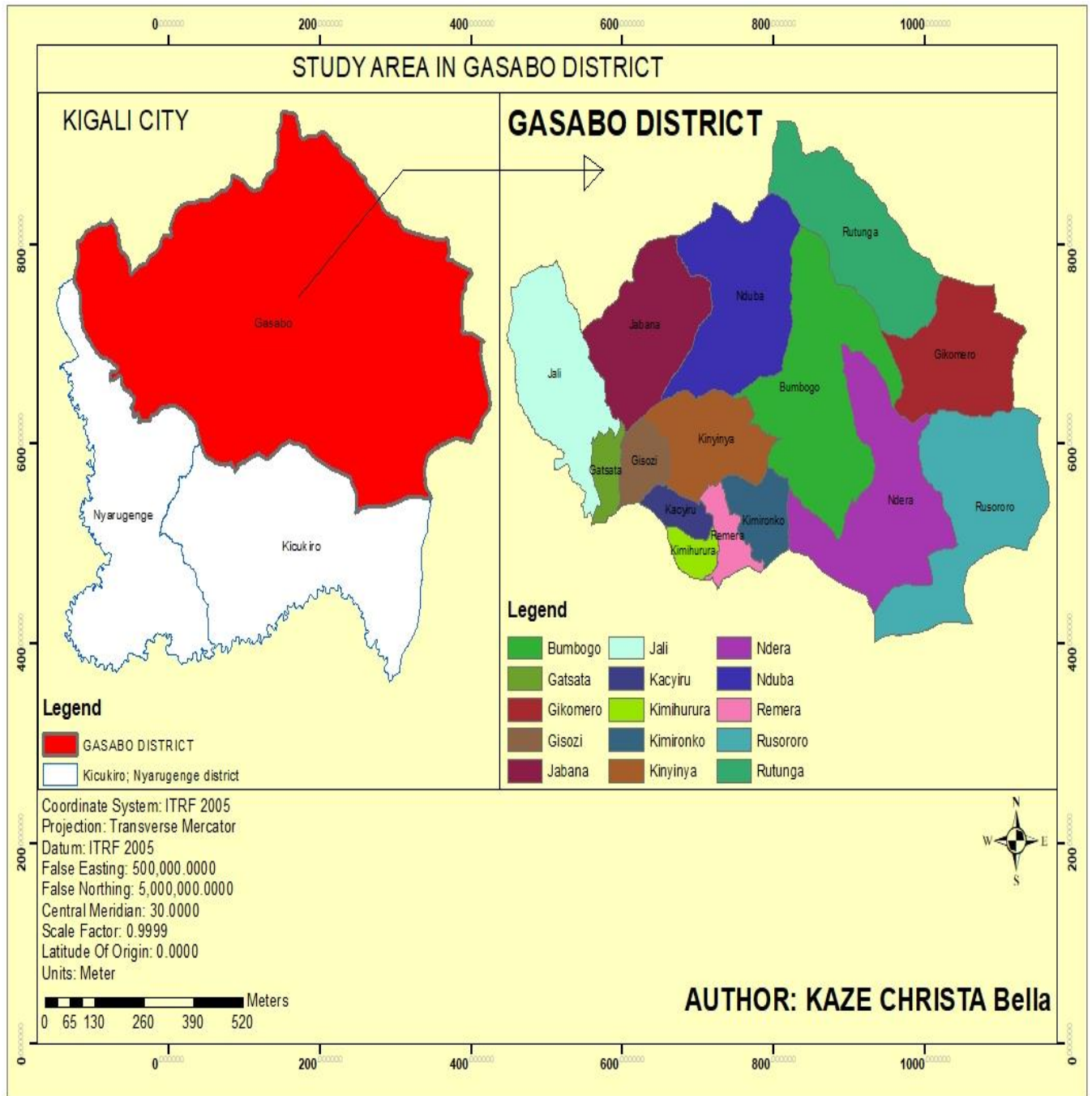
Figure 1**: Administrative map of Gasabo district**

3.3. Research design

In fact, the research design is the conceptual structure within which research is conducted; it constitutes the plan for the collection, measurement, and analysis of data (Kothari C. R., 2004).
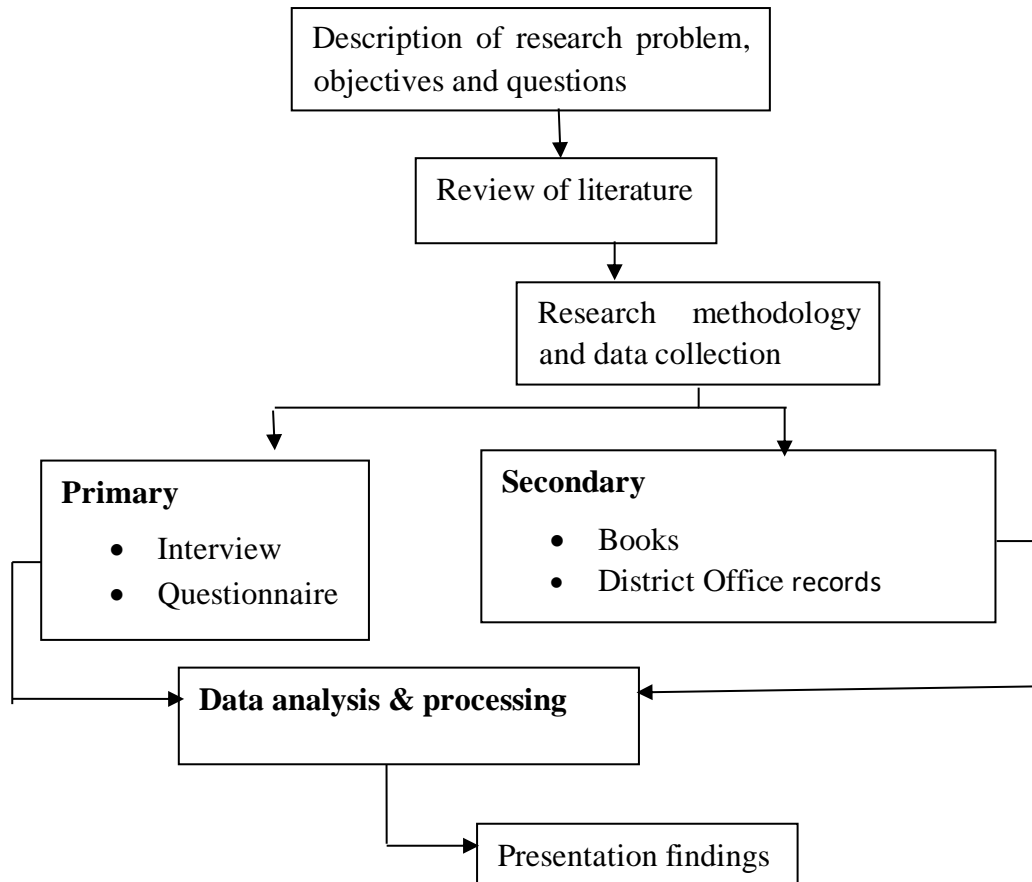
Figure 2**: Research design flowchart**

3.3. Source of data collection

This research used both primary and secondary types of data. In this research, the Primary and secondary source of data collection will be used as the source of data collection assessing the impacts of land information system on land services delivery in Rwanda especially in Gasabo district.

3.3.1. Primary source of data collection

The primary data are those data which was collected afresh and for the first time and thus happen to be original in character (Sapsford & Jupp, 1996). The primary data of this research are data which are related to the benefit of land information system in Gasabo district, the land administration services available in Gasabo district and the influences of land information system on land services delivery in Gasabo district. These data will be obtained through the survey by observation on the field, direct communication with the respondents through personal interview, focus group discussion and using questionnaires in order to assess the impacts of land information system on land services delivery in Rwanda especially in Gasabo district.

3.3.2. Secondary source of data collection

The secondary data of this research are those data on assessing the impacts of land information system on land services delivery in Rwanda especially in Gasabo district which are already available and have been collected by someone else, where have been passed through the statistical process (Sapsford & Jupp, 1996). For these types of data collection, some data may be either published or unpublished such as journals, book, magazines, newspapers and reports (Patzer, 1995).

A number of documents available in ULK Polytechnic Institute, on the internet, Gasabo district reports; written or recorded documents, thesis and dissertations in relation to the needs will be consulted for assessing the impacts of land information system on land services delivery in Rwanda especially in Gasabo district.

3.4. Data collection techniques

In collecting data of this study, questionnaire, interview, focus group discussion and documentation techniques were used in order to get information for assessing the impacts of land information system on land services delivery in Rwanda especially in Gasabo district.

3.4.1. Questionnaire

Questionnaire is a written or print form use in gathering information consisting of a list of question to be submitted to one or more persons or respondents (Kothari, 2004). The formulation or questionnaire items based on the nature of the problem to be solved and respondents briefed on

the objectives of the study (Gagnon, 2010). In this research project, questionnaires will be formulated in English and care took to ensure that questions are not subjective and it will be used to gather information from local people and local leaders living in Gasabo district as the respondents of this research project.

3.4.2. Documentary review

Documentation is a method used to go through different theoretical and conceptual views on development strategies and the project management, where different sources consulted to get accurate and useful information and data for the purpose of assessing the impacts of land information system on land services delivery in Rwanda especially in Gasabo district. This method will be used for assessing the impacts of land information system on land services delivery and the data will be obtained through different published writings such as books, journals, reports, internet and so on, where the information obtained were used in order to prepare the results of this study. Among those documents, include dissertations from ULK Polytechnic Institute main library, Gasabo district reports, journals and other important documents relevant to the topic under research.

3.4.3. Interview technique

An interview is defined as a more personal form of survey research in which questions are posed in face or telephone exchange between the interviewer and respondent (De Leeuw, 1992). The study was used face to face interview method to gather data related to the benefit of land information system in Gasabo district, the land administration services available in Gasabo district and the influences of land information system on land services delivery in Gasabo district and these data will be collected through person's interaction where structured and semi-structured interviews will be used to the landlords, sector land managers and director of one stop center to collect qualitative data in order to address all the questions of this research.

3.5. Population of the study

The group of individuals in a study, in a clinical trial, the participants make up the study povpulation (Winzelberg, 2014). In the various fields of healthcare, a population study is a study of a group of individuals taken from the general population who share a common characteristic, such as age, sex, or health condition (Wolfe, 2012). This research project will use 879,505 people

of Gasabo district as the respondents of this study in order to gather quality information that will be used in this research project.

3.6. Sampling technique and sample size

Due to the limitations of resources, time and logistics in contacting people within the project for assessing the contribution of land information system in supporting land service delivery in Rwanda especially in Gasabo sector, simple random sampling technique will be adopted for selecting the respondents among the people who own land in Gasabo district because it will enable the researcher to reach the targeted respondents quickly, where selected by using Yamane's formula in order to determine the sample size and which was used to investigate the units which fit the desired research objectives.

3.6.1. Sampling techniques

Sampling techniques provide a range of methods that help to reduce the amount of data collection by considering only data from subgroup rather than all possible case elements (Saunders & Allen, 2010). This research project was used the simple random sampling technique for selecting the sample size among the people who own land in Gasabo district where every member has an equal and independent chance of being included in the sample selected.

3.6.2. Sample size

A sample is a small group of cases drawn from and used to present the large group or whole population under investigation (Kothari, 2004). This study will use Yamane's formula, this formula use in order to calculate the sample size base on the 879,505 total populations living in Gasabo district and confidence level of 95% and precision of 0.1 assumed.

$$n = \frac{N}{1 + Ne^2}$$

Where:

n: represents the sample size

N: represents total number of population living in Gasabo district

e: is the level of precision also called sampling error which is range of the true value of the population is estimated.

$$n = \frac{879{,}505}{1 + 879{,}505\ (0.1)^2}$$

$$n = \frac{879{,}505}{1 + 879{,}505\ *\ 0.01}$$

$$n = \frac{879{,}505}{1 + 8{,}795.05}$$

$$n = \frac{879{,}505}{8{,}796.05}$$

$$n = 99.687148$$

Hence, $\mathbf{n = 99.98863126062267 \approx 100}$

The sample size of this research project were equal to 100 respondents living in Gasabo district.

3.7. Data processing and analysis

The data collected, sorted, edited, coded and tabulated for analysis. During this process, the data collected transformed into meaningful information for easy interpretation and understanding. The data analyzed by arranging and organizing them properly to be easily interpreted. The following steps will be used in data processing:

3.7.1. Data processing

Data processing is generally the collection and manipulation of items of data in order to produce meaningful information (Klomp, 2016). This research needed to process data through the editing, coding and tabulation data as shown below.

3.7.1.1. Editing

Editing is the process by which errors in completed questionnaires and recorded interviews are identified whenever possible (Bourque & Clark, 2005). The major aim of editing in this research project was to discover mistakes made during the field study, to monitor accuracy and find out whether there are some unfiled spaces in questionnaire guide. Sometimes the respondent made some spelling and grammatical mistakes the editor needs to correct them. The researcher edited the responses of the respondents in order to hold clear results from the respondent's answers.

3.7.1.2. Coding

Coding is used to summarize data by classifying different responses that made into categories for easy interpretation and analysis (Clark, 2005). The purpose of coding in surveys will being to classify questions into meaningful categories to bring out their essential patterns (Bourque & Clark, 2005). In coding, the questions will use numbers, it uses in this study in order to summarize data by classifying the different respondents into categories for easy dealing and understandable.

3.7.1.3. Tabulation

Data tabulation refers to the part of technical process on statistical analysis of data that involves counting to determine the number of the cases that fall into various categories, tabulation involves putting data into table form such as statistical tables showing the number of percentages occurrence of the responses to particular questions (Coxe, 2013). Thus, after eliminating errors, codes will be assigned to each answer and this stage led to the construction of statistical tables showing frequency distribution of answers to the questions addressed to the respondents.

3.7.2. Data analysis

Data analysis is defined as a practice in which raw data is ordered and organized so that the useful information can be extracted from it (Mabike, 2013). The findings drawn by the data obtained from people surveyed will be recorded in form of frequencies and percentage distribution, where presented by using tables and charts which has been produced with the help of SPSS software version 22.

The findings from the people surveyed through interview, focus group discussion, questionnaire, observation, and those of the literature through documents will be analyzed and draw the results related to the research questions. From the data that has been collected, the researcher concentrated on the task of analyzing them. A number of related operations have been applied in analyzing the data such as establishment of categories within the responds, the application of these categories to raw data through editing, coding, and tabulation. The results were necessarily used and being presented in form of tables and charts to meet the research objectives.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.0.Introduction

This chapter deal with the results, findings, and discussions that were processed and analyzed from the data collected within the respondents living in Gasabo district, Kigali city as the way of completing the research objectives and questions of this study about the impacts of land information system on land services delivery.

4.1. Identification of surveyed respondents

The respondents of this study were classified according to their gender, marital status, education level, by their ages.

4.1.1. Identification of surveyed respondents by gender

Chart above present surveyed respondents by gender, respondents under this study were given equal opportunity where both male and female participated actively in providing their responses. There was enough freedom to the respondents in answering the research questions, thus, 38 % of respondents were female, while 62 % respondents were male. The results show that a large number were male, this indicate that male participate in this research than female.
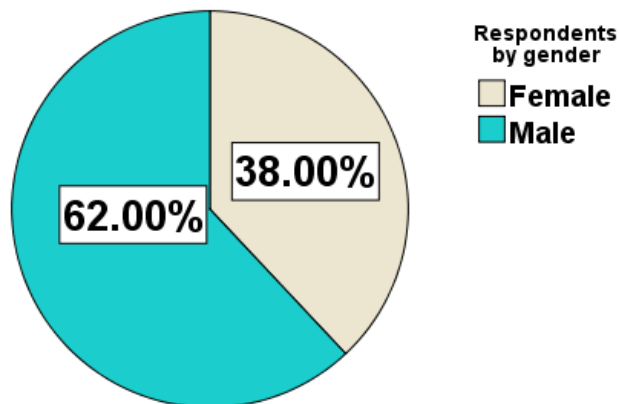
Figure 4:1; Respondents by gender

4.1.2. Identification of surveyed respondents by marital status

Chart above present surveyed respondents by marital status, 55% respondents were married, while 45 % of respondents were single. The researcher-surveyed respondents in according to their

marital status in order to know interested respondents living in Gasabo district participate in this study among different marital statuses. The results show that married people were interested than single ones.
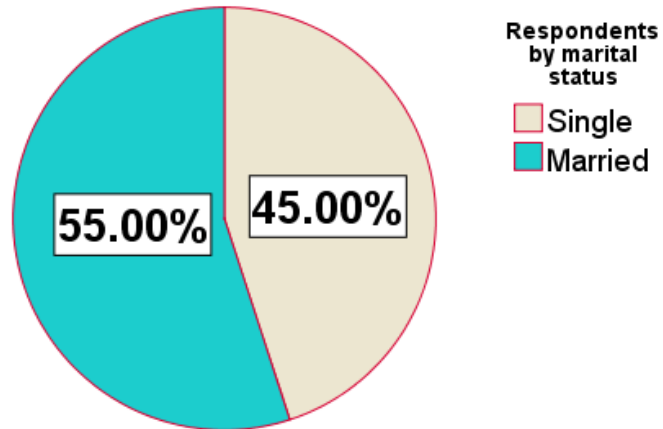
Figure 3:2; Respondents by marital status

4.1.3. Identification of surveyed respondents by education level

Chart above present surveyed respondents according to their education level, 37 % respondents has primary level, 45 % respondents has secondary level, and 15% respondents did university level, while 3% respondents have Master' degree. The researcher surveyed the respondents according their education levels in order to know the level of literacy or education level of respondents participate in this survey. The results show that most of respondents living in Gasabo district have attended secondary schools.
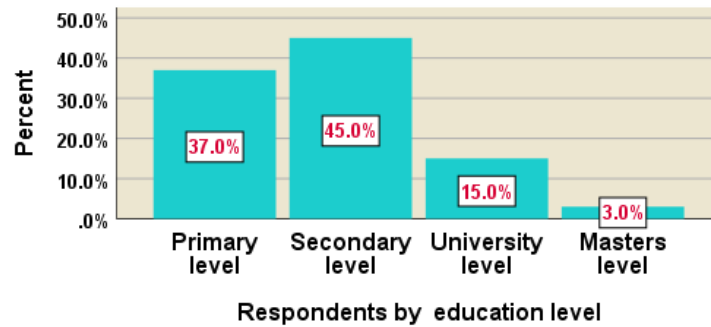
Figure 4:3; Respondents by their education level

4.1.4. Identification of surveyed respondents by their age

The table above displays the identification of surveyed respondents by their age shows, 39 % of respondents were in the age group between 18-30 years, 26% of respondents were in the age group between 31-40 years, 23% of respondents were in the age group between 41-50 years, and 12% of respondents were in the age group above 51 years. The results show that 39% of respondents in ages 18-30 years are mature, they can provide valid responses.

Table 1: Respondents by their age

Age categories	Frequency	Percentage (%)
Between 18-30 years	39	39%
Between 31-40 years	26	26%
Between 41-50 years	23	23%
Above 51 years	12	12%
Total	**100**	**100%**

4.2. Presentation of the major findings

This section deals with the presentation, interpretation, and discussion of the real results from respondents interviewed face-to-face including the data collected through a questionnaire for

respondents' views related to the impacts of land information systems on land services delivery. Case study of Gasabo district (2015 -2023). After presenting the identification of respondents, the data from key informants were supplemented by a literature review and this helped the researcher to interpret and discuss the data from the respondents of the study.

4.2.1. The benefits of land information system in Gasabo district

The surveyed respondents were asked about the benefits of the land information system in Gasabo district. The findings show that the benefits of the land information system in Gasabo district were Assisting in land use planning and more revenue through taxes, Supporting the easy access of land information, Supporting land use planning implementation, Supporting master plan implementation, Enhance accuracy and transparency in land administration services, Easy for ensuring efficient and effective land use planning implementation, and Land services got quick and people easily access land services, It supports property taxation, It helps efficient and effective land market, It Helps in monitoring the land use planning implementation, It is easy and quick land transactions process by the help of LIS, LIS reduces illegal land ownership transfers and It assists in mortgage. The following frequencies and percentages were found according to the results from the field among the respondents of the study.

Table 2**: Benefits of land information system in Gasabo district**

Statements	Agreed		Undecided		Disagreed	
	Freq.	%	Freq.	%	Freq.	%
LIS assists in land use planning and more revenue through taxes	100	100	0	0	0	0
LIS supports the easy access of land information	100	100	0	0	0	0
LIS supports efficient and effective land use planning implementation	100	100	0	0	0	0

	100	100	0	0	0	0
LIS supports efficient and effective master plan implementation	100	100	0	0	0	0
LIS enhances accuracy and transparency in land administration services	100	100	0	0	0	0
It is easy for ensuring efficient and effective land use planning implementation by using LIS	100	100	0	0	0	0
Land services got quick and people easily access land services through LIS	100	100	0	0	0	0
It supports property taxation	100	100	0	0	0	0
It helps efficient and effective land market	100	100	0	0	0	0
It Helps in monitoring the land use planning implementation	100	100	0	0	0	0
It is easy and quick land transactions process by the help of LIS	100	100	0	0	0	0
LIS reduces illegal land ownership transfers.	100	100	0	0	0	0
It assists in mortgage	100	100	0	0	0	0
Facilitates to monitor masterplan implementation	100	100	0	0	0	0

Based on the data collection through questionnaire and interviews from the respondents of the study, all respondents agreed 100% with the researcher that the LIS assists in land use planning and more revenue through taxes, LIS supports the easy access of land information, LSI supports efficient and effective land use planning implementation, LIS supports efficient and effective master plan implementation, LIS enhances accuracy and transparency in land administration

services, It is easy for ensuring efficient and effective land use planning implementation by using LIS, Land services got quick and people easily access land services through LIS, It supports property taxation, It helps efficient and effective land market, It Helps in monitoring the land use planning implementation, It is easy and quick land transactions process by the help of LIS, LIS reduces illegal land ownership transfers and It assists in a mortgage.

4.2.2. The land administration services available in Gasabo district.

The surveyed respondents were asked about the land administration services available in Gasabo district. From conducted questionnaires land registration, land transactions, land information records, land dispute resolution, and land property taxation are the land administration services available in Gasabo district. The following frequencies and percentages were found according to the results from the field among the respondents of the study.
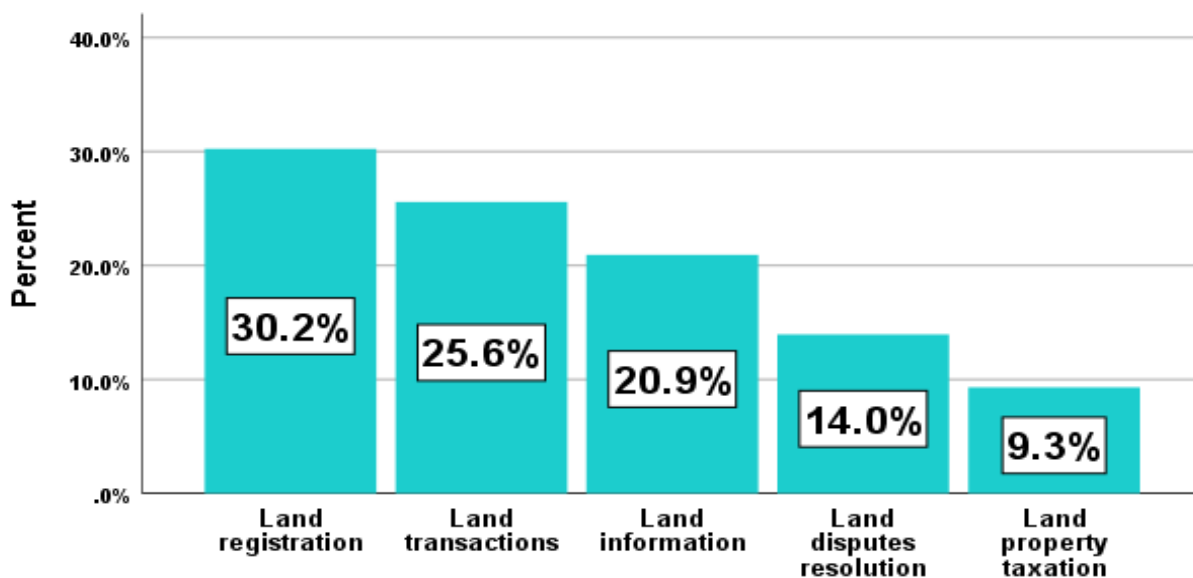
Figure 4:4; Land administration services available in Gasabo district

Chart 6 presents respondents' view about land administration service available in Gasabo district, 30.2 % who are 13 respondents says land registration as the service offered by land administration because people get to register their land through land administration. 25.6 %, who are 11 respondents reported land transactions as service offered by land administration as land administration facilitate the people to legalise their transactions which enable them to have proper land transactions. 20.9%, who are 9 respondents reported that land administration offers service

to access land information as people can go to the land administration with their UPI and be able to get all useful land information. The land administration is able to give that service with the aid of land information system. 14.0 % who are 6 respondents reported that land administration of Gasabo district offers services of land disputes resolution because land registration gives land information required to solve land disputes. This kind of information shows name, size and location which is vital in solving land disputes. 9.3 % who are 4 respondents reported that land administration offers service of land and property taxation as the land administration has all access to land information including the land use, owner, and size which is vital in land taxation.

The big number of respondents who   are which is 30% reported land registration because they said that land administration of Gasabo district's main service was land registration to grant owners land titles. The small number of respondents who are 9.3% reported property and land taxation, as some people still not understand the importance of land taxation. The obtained results are like of other researchers who did research in the same domain. As the obtained results shows that the available land administration services are land registration, land transactions, land information, land disputes resolution and land property taxation as well as stated by Williamson (2001).

4.2.3. The influences of land information system on land services delivery in Gasabo district

The surveyed respondents were asked about the influences of land information system on land services delivery in Gasabo district. The findings shown that the influences of land information system on land services delivery in Gasabo district were land information system provides the necessary information required for making the land use planning successful, land information system facilitates masterplan decision making in regards to master plan projects, land information system helps landowner to easily access information regarding masterplan and land use planning, land information system facilitates to monitor status of the master plans implementation, land information system provides land information that can be used for land use management process, land information system provides means to monitor land use management activities implementation, land information system offers means to change or modify the occurred changes in the existing land uses in relation to land use management, land information system makes easy

mutation after sales, land information system helps to remove cost associated with printing land administration documents, land information system promoted quick land service delivery, land information system removed issue of lost or damaged land title, land information system promoted zero trip and zero paper and land information system promoted smooth access financial services.

The following frequencies and percentages were found according to the results from the field among the respondents of the study.

Figure 4**: Influences of land information system on land services delivery in Gasabo district**

Statements	Agreed		Undecided		Disagreed	
	Freq.	%	Freq.	%	Freq.	%
Land information system provides the necessary information required for making the land use planning successful,	100	100	0	0	0	0
Land information system facilitate masterplan decision making in regards to master plan projects,	100	100	0	0	0	0
Land information system help landowner to easily access information regarding masterplan and land use planning	100	100	0	0	0	0
Land information system facilitates to monitor status of the master plans implementation	100	100	0	0	0	0
Land information system provides land information that can be used for land use management process,	100	100	0	0	0	0

Land information system provides means to monitor land use management activities implementation,	100	100	0	0	0	0
Land information system offers means to change or modify the occurred changes in the existing land uses in relation to land use management	100	100	0	0	0	0
Land information system makes Easy mutation after sales	100	100	0	0	0	0
Land information system helps to remove cost associated with printing land administration documents	100	100	0	0	0	0
Land information system Promoted quick land service delivery	100	100	0	0	0	0
Removed issue of lost or damaged land title	100	100	0	0	0	0
Land information system Promoted zero trip and zero paper	100	100	0	0	0	0
Land information system Promoted smooth access financial services	100	100	0	0	0	0

Based on the data collection through questionnaire and interview from the respondents of the study, all respondents were agree 100% with the researcher that land information system provides the necessary information required for making the land use planning successful, land information system facilitates masterplan decision making in regards to master plan projects, land information system helps landowner to easily access information regarding masterplan and land use planning, land information system facilitates to monitor status of the master plans implementation, land information system provides land information that can be used for land use management process, land information system provides means to monitor land use management activities

implementation, land information system offers means to change or modify the occurred changes in the existing land uses in relation to land use management, land information system makes easy mutation after sales, land information system helps to remove cost associated with printing land administration documents, land information system promoted quick land service delivery, land information system removed issue of lost or damaged land title, land information system promoted zero trip and zero paper and land information system promoted smooth access financial services.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

This chapter draws a conclusion and suggests recommendations. The conclusion was drawn according to the research objectives, and the recommendations were recommended referring to the obtained results. The results of the study are the key to setting the conclusion of the whole study and recommendations to different concerned members. The conclusion and recommendations are written in chapter five.

5.1. Conclusion

The purpose of this research was to explore the impacts of land information system on land services delivery. Case study of Gasabo district (2015 -2023). And the specific objectives were to identify the benefits of land information system in Gasabo district, to identify the land administration services available in Gasabo district and to determine the influences of land information system on land services delivery in Gasabo district. From the results of objective one which was to identify the land administration services available in Gasabo district. For this objective, the researcher concluded that the benefits of land information system in Gasabo district were Assisting in land use planning and more revenue through taxes, Supporting the easy access of land information, Supporting land use planning implementation, Supporting master plan implementation, Enhance accuracy and transparency in land administration services, Easy for ensuring efficient and effective land use planning implementation, and Land services got quick and people easily access land services, It supports property taxation, It helps efficient and effective land market, It Helps in monitoring the land use planning implementation, It is easy and quick land transactions process by the help of LIS, LIS reduces illegal land ownership transfers and It assists in the mortgage.

From the results of objective two which was to identify the land administration services available in Gasabo district, it was concluded that; land transactions, land information records, land disputes resolution, and land property taxation are the land administration services available in Gasabo district.

From the results of objective three which was to examine the influences of land information system on land services delivery in Gasabo district, it was concluded that; the influences of land

information system on land services delivery in Gasabo district were land information system provides the necessary information required for making the land use planning successful, land information system facilitates masterplan decision making in regards to master plan projects, land information system helps landowner to easily access information regarding masterplan and land use planning, land information system facilitates to monitor status of the master plans implementation, land information system provides land information that can be used for land use management process, land information system provides means to monitor land use management activities implementation, land information system offers means to change or modify the occurred changes in the existing land uses in relation to land use management, land information system makes easy mutation after sales, land information system helps to remove cost associated with printing land administration documents, land information system promoted quick land service delivery, land information system removed issue of lost or damaged land title, land information system promoted zero trip and zero paper and land information system promoted smooth access financial services

5.2. Recommendation

This research project formulated the following recommendations:
- ❖ Gasabo district should increase the time of mobilizing and decentralizing the laws, policies, rules, and regulations related to the use of land information system for efficient and effective land information services delivery.
- ❖ Gasabo district should continue collaborating with all sectors in this district so as to deliver efficiently land services in whole areas in this district
- ❖ The population living in Gasabo district should use land information in ways of implementing well different land administration policies and regulations.

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APPENDICES

<u>Appendix A: Structure of the questionnaire for the respondents</u>

Questionnaires for the respondents to be used in data collection, has been prepared for both the leaders and the one who owns land in Gasabo district.

Dear respondent,

I, **KAZE CHRISTA Bella,** as finalist student at ULK Polytechnic Institute, Department of Civil Engineering in land surveying option. I am conducting research entitled **"IMPACTS OF LAND INFORMATION SYSTEM ON LAND SERVICES DELIVERY. CASE STUDY: GASABO DISTRICT (2015 -2023).''.** Thus, this questionnaire will help to collect basis data for the research. This survey questionnaire has purely academic goals, and any information provided is confidential and will be utilized exclusively for the study. It would be greatly appreciated for offering me few minutes of your time to respond to the following questions.

Sincerely

KAZE CHRISTA Bella

A. Instructions: For a correct answer select by using this symbol: ✓

<u>**Section I. Interviewee information**</u>

Names: …………………………………………………………

Signature………………………………………………………….

District…………………………………………………………

Sector………………………………………………………...

Cell……………………………………………………….......

Village……………………………………………………….

1. Gender

      a) Male

      b) Female

2. Marital status

    a) Single

    b) Married

    c) Divorced

    d) Widowed

2. Age of interviewer

     a) 21-30

     b) 31-40

     c) 41-50

     d) 51 above

3. Level of education

     a) Primary school

     b) Secondary school

     c) University level

     d) Masters

B

Others please specify…………………………………………………………………………………

………

…

Section II. **Questions according to objectives**

II. 1. Questions on the benefit of land information system in Gasabo district

1. Do you have any information about the benefit of land information system in Gasabo district?

a) Yes   ☐

b) No   ☐

2. If Yes, What are the benefit of land information system in Gasabo district?

………

………

………

………

II.2. Questions on the land administration services available in Gasabo district

1. Are there land administration services ?
    a) Yes ☐
    b) No ☐

2. If yes, what are land administration services ?

………

………

………

II. 3. Questions on the influences of land information system on land services delivery in Gasabo district

1. Is there any influences of land information system on land services delivery in Gasabo district?

a) Agree ☐

b) Disagree ☐

3. If you agree, what are the influences of land information system on land services delivery in Gasabo district?

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Thank you!