ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

COLLEGE OF BUSINESS AND ECONOMICS

The ROLE OF INFORMATION SYSTEM FOR MANAGEMENT IN DESISION MAKING: A CASE STUDY OF NIFAS SILK LAFTO SUBCITY ADMINESTRATION OFFICE

A SENIOR ESSAY THESIS SUBMITTED TO THE DEPARTMENT OF HUMAN RESOURCE MANAGEMENT IN PARTIAL FULFILMENT FOR THE REQUIREMENT OF MASTERS OF ART (MA) DEGREE IN HUMAN RESOURCE MANAGEMENT.

Prepared by: Shemeles G/kirstoes

ID.No: GSE/7725/12

Submitted to: Zegeye Muluye (Ph.D.)

June 10, 2022

Declarations

I, shemeles G/kirstoes, Registration Number/I.D. Number ID.No: GSE/7725/12, do hereby declare that this Thesis is my original work and that it has not been submitted partially, or in full, by any other person for an award of a degree in any other university/institution.

Name of Participant shemeles G/kirstoes Signature……..... Date……

This Thesis has been submitted for examination with my approval as a University supervisor.

Name of Advisor Zegeye Muluye (Ph.D.)Signature…….. Date…….....

Approval

The undersigned certify that they have read and hereby recommend to the ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE to accept the Thesis submitted by shemeles G/kirstoes, and entitled "The role of information system for management on the decision making at Nfas Selk Lafto Sub-city administration office" in partial fulfillment of the requirements for the award of a Master's of Art Degree in Human Resource Management.

Name of Advisor: Zegeye Muluye (PhD) Signature_____

Date_____

Name of Internal Examiner _____ Signature_____

Date_____

Name of External Examiner _____ Signature_____

Date_____

Name of Head of Department _____ Signature_____

Date_____

Acknowledgements

The process of carrying out this study could not have been complete without the support and guidance of my lecturers, family and friends. I am deeply grateful to my supervisor Dr. Zegeye Muluye for his guidance through the process of developing this proposal. I am also thankful to all my lecturers And Department Head for their inputs through the different courses they facilitated .I am also grateful to all the respondents who took their time to fill the questionnaires and to those who took part in the interviews.

I would like to thank Nfas Silk Lafto Sub-City Administration for their understanding and co-operation during the time of this study and the Addis Ababa Administration for giving this golden opportunity. Besides, I would also like to thank my colleagues; who always stepped in to carry out my tasks whenever I was busy studying.

Table of Contents

List of figures

Tables **Page**

Acronym

EDP–Electronic Data Processing

GTP–Growth and Transformation Plan

HRM –Human Resource Management

HRIT–Human Resource Information Technology

ICT–Information Communication Technology

IS–Information System

IT–Information Technology

ITS–Information Technology Service

MFI–Micro Finance Institution

DAB–Data Base Administrator

DBC–Data Base Center

DSS–Decision Support

EIS–Executive Information System

GDSS–Group Decision Support System

KMS–Knowledge Management System

MIS–Management Information System

0SS–Operational Support System

PCS–Process Control Systems

TPS–Transactional Processing System

Abstract

The goal of this study was to see how the Management Information System affected the organization's decision-making. The aim of the study was to assess the role of information systems for mangers on decision making in the study area and the link between management information systems and organizational decision-making. An information system is a collection of hardware, software, databases, networks, and people used to gather, store, and process data in order to provide information to an organization. In the Nfas silk Lafto sub-city, management information system is not the most often used information system. The research used a descriptive design, and data was gathered from primary sources. Following a review of the literature, the findings of the study found that management information systems deliver organized and real-time information to management. According to the findings, there is no strong link between the management information system and the organization's decision-making. According to the study, management information systems play a critical role in helping organizations make decisions by providing needed information, assessing and understanding situations, recognizing problems, and assisting management teams.

Key words: Information system, Management information system, Decision making process.

CHAPTER ONE
1. INTRODUCTION

1.1 Background of the study

The innovation of advanced electronic equipment revealed that organizations' managers should use computer-based information systems for planning, controlling, decision making, and problem solving rather than the traditional method of waiting for reports. This new type of information usage in organizational decision making is known as a management information system (MIS) or computer information system (CIS), and it is made up of five related components: hardware, software, people, procedures, and a data base. The goal of a management information system is to provide quality information to managers so that they can make better decisions.

Management Information Systems (MIS) is a system that converts data into information and communicates it to managers at various levels of an organization in an appropriate format. The information can help with effective decision making or execution planning (Patterson, 2005).

Managers put in a lot of effort when making decisions or gathering information to make decisions. Furthermore, in many organizations, day-to-day decisions embodied in the company manager's methodology, rules, or philosophy is encouraged to collect data and follow the decision that resulted from experience. The decision process problem entails gathering data, identifying problems, making a decision, and putting it into action.

MIS facilitates in the decision-making process for both structured (programmable) and unstructured (non-programmable) decisions. Structured decisions involve situations in which the procedure to be followed and when a decision is required can be specified in advance. Unstructured decisions involve conditions in which it is not possible or desirable to specify the majority of the procedures to be followed in advance (Brien, 1996)

MIS basically involves the process of collecting, processing, storing, retrieving and communicating the relevant information for the purpose of efficient management operations and for business planning in any organizations. Thus, the success of effective decision-making, is consider as the heart of administrative process, is highly dependent partly on available

information, and partly on the functions that are the components of the process (Nath & Badgujar, 2013)

A management information system is made up of computer-based and/or manual procedures that provide useful, complete, and timely information. In a changing business landscape, this information must support management decision making. The MIS system must provide managers with accurate, timely, and comprehensive information. Quality data and timely information are required for good decision making; a MIS is specifically designed to provide information on a timely basis. An MIS also provides various types of information based on the needs of users in order to improve effectiveness and efficiency (Shim, 2000).

The advancement and use of management information systems is a modern and recent phenomenon in all organizations, particularly in Nafas Selk Lafto sub-City, and is related to the use of appropriated information that will lead to better planning, better decisions, and better results.

Ethiopian civil service is characterized by continuous organizational reforms aimed at improving effectiveness through experimentation with various management models. The changes that have occurred in Ethiopia's public sector performance management system as a result of the implementation of public sector reform programs. The study uses government policy documents, legislation, reform studies, BSC-based plans, performance reports, and study reports to assess the progress made in transforming performance management to a result-oriented approach. The findings show that systematic organizational performance management with clear targets, acceptable measurement, and performance accountability had never been seen in Ethiopia. Prior to the third phase reform in 2003, the government paid little attention to performance management, despite its critical role in achieving capacity building and improving performance. Since 2003, the adoption of BPR, BSC, Citizen Charter, and Change Army have brought results-oriented principles into the public sector, but due to the failure of such management tools to be implemented, a result-oriented performance management approach that includes goal setting, measurement, and the use of performance information for learning, reward, and accountability has not been realized in Ethiopia's civil service system.

Decision-makers based on information technology should implement civil service reforms that will improve service delivery and help them control their budget deficits. One of the recommendations for achieving these goals was to reduce the number of redundant civil servants. For example, beginning in 1992/93, Tanzania was required to lay off 50,000 of its

330,000 civil servants in two and a half years (Malima, 1994). Ethiopia's civil service work force was also reduced from 236,410 in 1989/90 to 223,733 in 1991/92, most likely as a result of restructuring its civil service organizations (Federal Civil Service Agency, 2006: 18). Civil service organizations are used by governments to provide public services to their citizens. As a result, it is critical to highlight the main characteristics of organizations in order to recognize the importance of information technology in improving the efficiency of these public organizations' services.

Every managerial area of the sub-city has its own decision-making process for long-term and medium-term decisions, in which top managers will be involved. However, for short-term and tentative problems, each team leader and unit can make a decision, but they do not have detailed information to report to the respective bodies. Nafas Selk Lafto sub-city employees & both decision making forms for its long period functions and for those temporary or day to day activities, means that structure (long period or programmed) and unstructured (adhoc, temporary, or non-programmed) form of decision making and they are passed either by individuals or groups. So, different researchers attempted to investigate the role of MIS in organizational decision making by taking into account the contribution of MIS in organizational decision making.

In Ethiopia implementation capacity building especially to modernize the administration sector lies on information technology at the heart of development strategies. That is why government institutions, now give high concern for institutional capacity Building. IT is one of the critical tools selected and being implemented in the government institutions so as to put into concrete practices what has been laid down as a basic guide lines, principles, and paradigms by the reform program. As a nation, most organizations and sectors have already entered the implementation phase of the new chapter which depends on information technology. In the same manner Addis Ababa city administration has carried out this technological development in to account in a number of bureaus, agencies, and all sub cities have started implementation. For the purpose of my study, I selected Nefas Silk Lafto sub-city administration office in the case of the role of information technology for mangers for decision making to promote effective administration service. This study area was very much familiar for me and a place where I am working; I have seen a lot of problem that decision were delayed because of shortage of information. As we all know MIS is to assess the information needs for decision making of management at different hierarchical levels, so that the requisite information can be

made available in both timely and usable form to the people who need it. In our office there is also low customer satisfaction and high process time per customer most of the time information gathered can easily be lost because of filing system.

1.2 Statement of the problem

The Management information systems play an important role in decision making and other activities of the world's societies. We live in an emerging global information society, with a global economy that is becoming increasingly reliant on the creation, management, and distribution of information resources via interconnected global networks. As a result, information is a critical resource in today's society. People in many countries no longer live in agricultural societies, where the majority of the workforce is made up of farmers, or even industrial societies, where the majority of the workforce is made up of factory workers. The Government of Ethiopia (GOE) has guided all public sectors towards results-oriented management, emphasizing evidence-based decision making directed towards performance improvement,

The goal is to use the computer in a way that attracts customers in order to gain a competitive advantage. The Executive is also in charge of organizing the MIS department to meet the needs of the business. If there is no one in this advocacy role evaluating existing systems and comparing them to new products, an organization is unlikely to receive new equipment on a regular basis. Even if a large number of users are dissatisfied with an existing system, they will have a better chance of acquiring new technology if they can voice their concerns to a high-ranking official. In this regard, the manager is in charge of long-term information technology planning (Anderson, 1997).

This study focused on the problem encountered to measure the importance and the role of management information systems in managerial decision-making in Nefas Silk Lafto sub-city administration office. There are also major gaps there are problem of interconnectivity i.e. no connection and transfer of information from one department to another. In some offices like custom and duty desk there are problems associated with the use of information technology even there is no enough computers. Concerning this role as a result of the continuous and rapid development of information technology, and the attempt to provide a true picture of the role of management information systems in managerial decision-making and the correction of the

decision-making mechanism due to its importance in various fields and this study put forward the gap found in Nfas Silk Lafto Administration office that neglect the use of information technology. Information quality and use remain weak within every sector, particularly at the peripheral levels of Woredas and facility, which have primary responsibility for operational management under the Woredas decentralization process begun in 2002 GC. Prior to the advent of information technology, these gaps are manifested in most administration operate manually given rise to operational inefficiencies such as waste of time, duplication of efforts, high cost of operations, heavy work load on the managements and employee, low customer satisfaction and high process time per customer, information gathered can easily be lost because of filing system, there are problem of interconnectivity i.e. no connection and transfer of information from one department to another is also another problem. If the organizations aspire to compete in the global environment (to be world class) without taking full advantage of information technology, then their aspiration can never be met. Thus, this research works will focus on the impact of information system for mangers on decision making in the study area and what is the practical challenges in promoting results-oriented management, emphasizing evidence-based decision making directed towards performance of the civil service, further more do customers satisfied with the service or not and what kind of intervention needed to use information technology system effectively.

The study's problem is also to assess the significance and role of information systems in managerial decision-making in the Nfas-Silk-Lafto sub-city. Given the ambiguity surrounding this role as a result of the continuous and rapid development of information technology, and the attempt to provide a true picture of the role of information systems in managerial decision-making and the correction of the decision-making mechanism due to its importance in various fields, this research seeks to answer the following question: What is the importance and role of management information systems in managerial decision-making in Nfas-Silk-Lafto Sub-city administration

1.3 0bjectives of the study

1.3.1 General 0bjective

The overall objective of the study is to explain the role that information system on the decision making process at Nfas Selk Lafto Sub-city.

1.3.2. Specific objective

- ✓ To assess the role of information technology on decision making Nfas Selk Lafto Sub-city administration
- ✓ Examine the pragmatic quality and challenge using information system Nfas Selk Lafto Sub-city administration
- ✓ The study intends to identify whether efficiency and effectiveness of mangers increased in the study area as a result of information technology.
- ✓ To identify the problems associated with the application of information system in Nafas Silk Lafto Sub-city administration.

1.3.3. Research Questions

This research intend to answer the following research questions

- What is the factor affecting decision making process in Nfas Selk Lafto sub-city administration office?
- What is the role of information system for mangers in Nfas Silk Lafto sub-city administration?
- Has the application of information technology enabled the study area to achieve customer satisfaction?
- Are there problems associated with the use of information system in the study area?

1.3.4. Significance of the study

This study is significant because it determined the extent of application of information system in Nafas Silk Lafto sub-city and will also facilitate the application of information system in the sub-city. Also, the study will highlight on the problems associated with application of information system technology on decision making in organizations and will enable organizations to provide necessary measures to control such problems. Furthermore, this study may contribute to the current of knowledge on the role of information system in administrative decision making. Moreover, the study's findings may be useful for policymakers and practitioners seeking to promote the use of technology in organizational decision making. Finally, this study may be useful to other researchers who are interested in the role of MIS in organizational decision making and it will serve as a source of information for further researches in the same field.

1.3.5. Scope of the study

This study have the geographical, the conceptual and methodological delimitation. This study conducted on Nafas Silk Lafto sub-city, with specific area of the role of information system for mangers in organizational decision making. The required informationwas gathered from employees and managements of Nafas Silk Lafto sub-city for manageability of the study. Conceptually, the study was limited to show to the role of MIS in organizational decision making in Nafas Silk Lafto sub-city administration office. Methodologically, the study intended to use the cross-sectional survey in the attempt to achieve its objectives.

1.3.6. Limitation of the study

This study, like other studies, has some limitations. One of its limitations originated from its design. In a sense, the cross-sectional survey design in which the data for the study will be collected at one point in time from the manager and employees of the Nafas Silk Lafto administration. Because of time and financial constraints, it will be preferable to use a longitudinal survey design to collect data from Nafas Silk Lafto administration office managers and employees at various times during their stay in the office. As a result, the researcher recognizes that the current study's findings could be improved by implementing a longitudinal study to determine the difference between factors of issues' over time at different years and administrative offices of the sub-city.

1.7 Definitions of Key Terms

Data

Data are raw figures or facts that represent some type of transactions or activities within an organization which are inputs in data processing. Asika, N (1991)

Information

The term "information" refers to the useful outcome of data processing that can be used to aid decision making..

Technology

This is the science of technical processes in a broad but related field of study. It is the application of any or all applied sciences with practical value..

Computer

A computer is an electronic device that transforms or processes data and provides the results or output as information that can be used for decision making.

Internet

An internet is an inter-connected global network of computers based upon the TCP/IP (Transmission Control Protocol/Internet Protocol) Protocol suite.

Network A network is a group of inter-connected systems sharing services and interacting by means of a share communication link. It is also an inter-connection of computers, peripherals and communication lines.

Output

This is information sent from a computer to an external location such as printer, screen or disk drive.

Program

A set of processor instructions designed to carry out a specific function. A Process is a running program. Software is a collection of one or more programs and associated data designed to meet the needs of a specific application.

Management Information System (MIS)

Management Information System is an integrated system of information flow designed to enhance decision making effectiveness.

Information technology (IT)

All of an organization's hardware and software for storing, retrieving, transmitting, and managing electronic information is referred to as information technology. Handling: refers to the transformation of input into output. Manufacturing processes, human breathing processes, and mathematical calculations are all examples...

Feedback: Is data about the performance of a system. For example, data about sales performance is feedback to a sales manager.

Control: involves monitoring and controlling feedback to determine whether a system is moving toward the achievement of its goal. The control function then makes necessary adjustment to a system input and processing components to ensure that it produces proper output. (A. O'Brien, 2003:p. 8)

1.1.8. Organization of the Study

The paper was organized into five chapters. the first chapter deals with introduction including back ground of the study, statements of the problem, objectives of the study, scope of the study, significance of the study, limitation of the study and organization of the study. The second chapter reviews literatures related to the study. In this chapter various theoretical concepts that

relates with the role of information system on decision making and its measurement and dimension of information system for mangers usage will be discussed. The third chapter focuses on methodology of the study. And the forth chapter in dealing with data analysis and interpretation and the last chapter with presenting summaries of major findings, the conclusions and possible recommendations will be organized.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2. Introduction

This literature review part is to provide a summary of previous related studies on the research problem areas. The available literature is aimed at reviewed to identify the major concepts and research problem related with this research topic. That is to answer the research questions and contribute to the emergent knowledge based on role of information system for mangers in decision making practice in sub-city administration. The literature review is more concentrating on the status and practice of information system.

2.1 Components and elements of information systems

The information system in general has interconnected components, and the degree of interconnection of these components provides the system with the required efficiency (Al-Rabia, 1993: 24). Each of the system's components contains elements that are assigned to perform the duties of these sub-components and aid in understanding how the system operates. In all cases, the information system's operations do not fall outside the scope of the following processes:

Data collection: During this process, data is collected from various sources while considering the availability of reliability (correctness, accuracy, and comprehensiveness), flexibility, and cost and value appropriateness. Data on future trends and environmental prospects are also provided to the organization for use in environmental monitoring (prediction and analysis) (Ansoff & Igor, 1990: 66).

Data Processing: Data is transferred from its initial structure to meaningful and valuable information. This process is divided into data classification, collation, summarization, processing and testing (Curtis, 1995: 41). As well as extracting results so that they are ready for timely use by beneficiaries. A key concern of this process related to information systems is the addition of the (future horizon) component to raw data, and to achieve purpose appropriate prediction methods should be used as an integral part of any formal information system. Digman (1990: 275 - 278) has clarified that the rare resource today is not the availability of information, but the ability to process that information. The information system that provides managers with huge amounts of information provides bad services. As it is required to clear that information and ensure that only the important of them to those managers.

Storage of information: The need for information does not end simply because it is used for a certain period, since there is some information that is not used once it is extracted, it is very important to store it until the need arises (Al-Rabia, 1993: 36).

Updating: The information continuously generated is updated according to the changes in activities. Updating means the following: (Al-Ta'ai, 2000: 36):

A. Adding information that did not exist.

B. Make adjustments to information commensurate with the change.

C. Delete old information that will no more be needed

Information retrieval is the process of retrieving stored information when needed by users; the time factor should be considered in order to avoid losing the anticipated benefit due to delay. In turbulent environments, the organization that produces information and distributes it to appropriate decision centers faster than its competitors has a competitive advantage (Thompson, 1997:336).

Output: In information systems, output involves producing useful information, usually in the form of documents and reports.Peter (1988:4) describe information and the individual data that match with the subject and the importance of the decision.

Output derives its value from to what degree it impact the decision and the other hand what is the cost of getting it, so if the output of the information system does not improve the decision or impact it then information will be of negative value.

2.2 Decision Support Systems

A Decision Support System is a computer based system intended for use by a particular manager or usually a group of managers at any organizational level in making a decision in the process of solving a semi structured decision. Decision Support Systems are a Kind of organizational information computerize systems that help manager in decision making that needs modeling, formulation, calculating, comparing, selecting the best option or predict the scenarios .Decision-support systems are specifically designed to help management make decisions in situations where there is uncertainty about the possible outcomes of those decisions. According to Shim (2007) a decision support system is computer-based information

The **six components** that must come together in order to produce an information system is:

Hardware: Hardware refers to machines and equipment. This category in a modern information system includes the computer and all of its supporting equipment. Input and output devices, storage devices, and communications devices are examples of support equipment. Hardware in per-computer information systems may include ledger books and ink.

Software: The term software refers to computer programs and the manuals (if any) that support them. Computer programs are machine-readable instructions that direct the circuitry within the hardware parts of the system to function in ways that produce useful information from data. Programs are generally stored on some input/output medium, often a disk or tape. The "software" for pre-computer information systems included how the hardware was prepared for use (e.g., column headings in the ledger book) and instructions for using them (the guidebook for a card catalog).

Data: Data are facts that are used by systems to produce useful information. In modern information systems, data are generally stored in machine-readable form on disk or tape until the computer needs them. In pre-computer information systems, the data are generally stored in human-readable form.

Procedures: Procedures are the policies that govern the operation of an information system. "Procedures are to people what software is to hardware" is a common analogy that is used to illustrate the role of procedures in a system.

People: Every system needs people if it is to be useful. Often the most overlooked element of the system is the people, probably the component that most influence the success or failure of information systems. This includes "not only the users, but those who operate and service the computers, those who maintain the data, and those who support the network of computers.

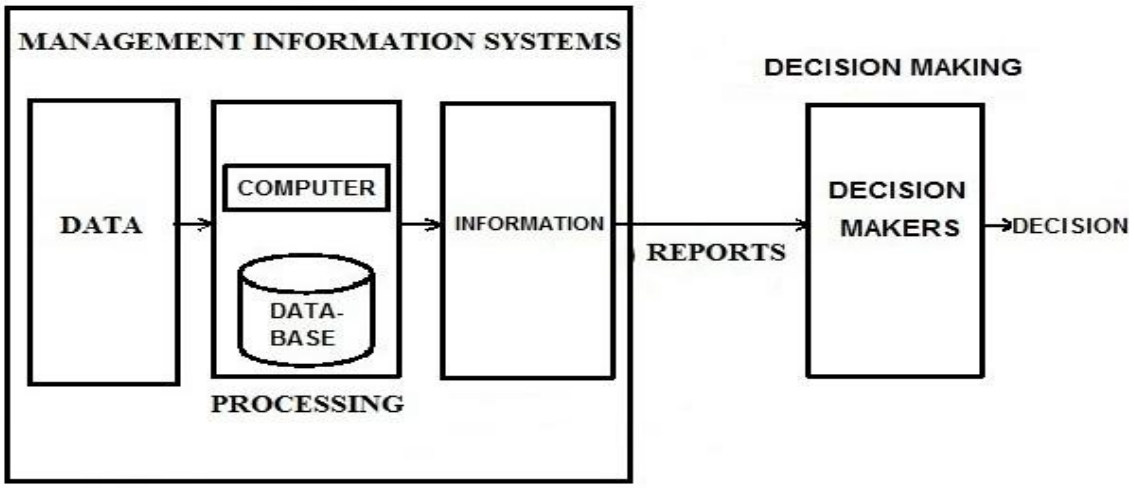
Internet: is a combination of data and people . (Although this component isn't necessary to function). Data is the bridge between hardware and people. This means that the data we collect is only data until we involve people. At that point, data is now information.

2.3. The concept of information System

The most significant development of the 20th century, which has significantly influenced business operations, is the emergence of the information age. The progress achieved in information technology has made it possible for information to be digitalized and could be processed and managed faster, cheaper and in mega or terabytes (Ovia, 2003**)**

Management Information Systems (MIS) is a system that converts data into information and communicates it to managers at various levels of an organization in an appropriate format. The information can help with effective decision making or execution planning (Patterson, 2005). MIS is defined as the process of gathering, processing, storing, retrieving, and communicating relevant information in order to facilitate efficient management operations and business planning in any organization**.** MIS is the way of gathering, processing, storing, retrieving, and communicating relevant information in order to improve management operations and business planning in any organization. Thus, the success of effective decision-making, which is regarded as the heart of the administrative process, is highly dependent on both available information and the functions that are process components (Nath & Badgujar, 2013).

MIS is defined as a type of information system that converts data to information and summarizes that information into meaningful and useful forms such as management reports for use in managerial decision making.



1 **Figure 1 Relationship between Management Information Systems and Decision-Making**

Source; Ery Novita Sari, Denis Priantinah (2019

According to the diagram the interaction of management information systems and decision-making the issue is that there is no documented evaluation model for MIS success. Furthermore, the current IS success model is solely focused on technology. Consequently, there are is need to design and develop such an evaluation model which focuses on technology and management that can be used by managers.

2.3.1 Information Quality Measures

The desirable characteristics of management information system outputs are defined as information quality. Information quality measures the output of an information system rather than the performance of the system (De Lone & McLean, 1992). The accuracy of information has an impact on managerial decision-making. There are numerous measures of information quality, and these measures differ from one researcher to another**.** Accuracy, completeness, conciseness, consistency, relevance, timeliness, amount of information, accessibility, and understandability are common measures for information quality used. To advise decision makers in making sound decisions, information should be accurate or free from error, complete or contain all required details, in a form that is short enough, presented in the same format, relevant to the purpose for which it is required, available quickly and timely to support information needs, appropriate amount of information, easy to access, and easy to understand.

2.3.2 Management information system

In today's world, the need for up-to-date information is unavoidable in order to make sound decisions in all walks of life. Information is required everywhere, whether in industry, commerce, defense, banking, education, economics, or politics. Information is live because it must be updated constantly and is renewable. Because of the exponential growth of information, it is necessary to collect, store, and retrieve information in various fields as needed.

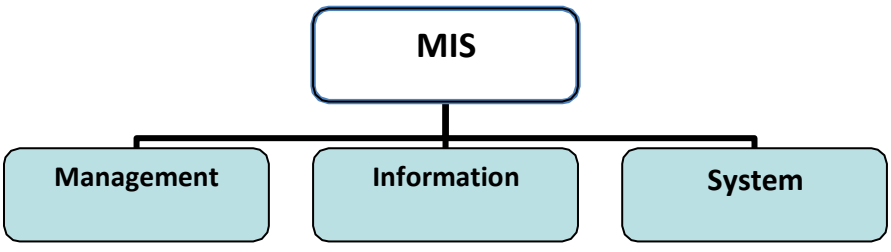


Fig 2 MIS

Management

Management has been defined as a function, a process, a profession, and a social group. It refers to the types of tasks and activities that managers perform. Management functions such as planning, organizing, directing, leadership, and controlling determine the specific nature of the activities.

Planning: It is the process of deciding in advance the courses of action to be followed and when and how to undertake these. Its objectives in the best possible manner and for anticipating future opportunities and problems

Organizing: It is formal grouping of people and activities to facilitate achievement of the farm's objectives. It is need for assigning responsibilities, jobs and hierarchy among personnel.

3. **Controlling**: It is the checking the progress of plans and correcting any deviations that may occur along the way.

Directing: It is the process of activating the plans, structure and group efforts desired direction. It is needed for implementation of plans by providing desired leadership motivation and proper communication

2.3.3.The management can be group into 3 hierarchical levels

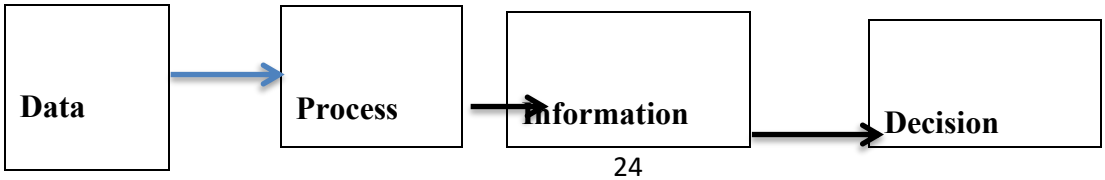
Top Management: - It is establishes the policies, plans, objectives and budget framework under which various departments will operate of the organization.

Middle Management: - It has the responsibility of implementing the policies and overall plans of the top management.

Junior Management:-It has the responsibility of implementing day to day operations and decisions of the middle management to produce goods and services to meet the revenue, profit and other goals.

Information

Information is the result or product of processing data. Information can be defined as the data which is organized and presented at a time and place so that the decision-maker may take necessary act.



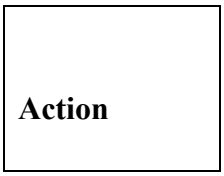


Fig 3 : Conversion of Data into Decision

System

A system is a collection of elements or components that work together to perform specific functions. A system is composed of sub-systems. The systems can be both natural and man-made. A Sub system that may made up of other sub-systems. A subsystem is a component of a larger system.

2.4. Some Aspects of Information Technology

2.4.1. Computer and computer Net work

Computer

A computer is an electronic machine which is capable of accepting data as input, preserving this data for later use, or immediately performing logical operation on it to produce result termed output because the computer operates at electronic speed and logic. It can perform large repetitive and complex calculation with accuracy and speed With the growth and predominance of microcomputer in the eighties, personal computer (PCs) became the virtual standard for home and office use. This improved technology and production techniques resulted in their manufacture becoming an all corners market. This made the companies in Asia rapidly entered the market with their traditionally low production costs, the competition that was to drive down costs, while the essential components of the PC still remain the microprocessor. Microsoft now controls 85 percent of the global operating system today, which are a set of program instructions that co-ordinate the internal operations of a PC, having become completely graphical in operation.

Computer Network

Networking according to Zahedi in the international encyclopedia of Business and Management (1996), involved connecting a number of computers, telecommunication and other devices together so that information and equipment can be shared.

According to Bartol et al (1998) Networking could be of these forms

Local Area Network (LAN) According to Turban (2000) Local Area Network connects information systems and users within a much smaller area such as building, an office or a manufacturing plant.

Wide Area Network (WAN)

According to Turban (2000) Wide Area Network is a network that stretches over a wide geographical area such as a city, a region, a country or even globally.

Telecommunication System

According to Bartol, et al (1998), telecommunication is the electronic communication of information over a distance. Telecommunication technology comprises the physical devices and the software necessary to connect various pieces of computer hardware and enable the transfer of information from one location to another. Telecommunication has vastly increased the potential for sharing information within and across organizations. Telecommunication is the transmission of signals over a distance for the purpose of communication. This is the easiest way for organizations that contract business internationally. In modern times, telecommunication typically involves the use of electronic devices such as telephone, television and teletype.

2.5. Document Reproduction System as a Toll for Information Technology

Some organizations still store paper documents in various types of file cabinets, but many documents are now stored electronically or on film. Printers and copiers-the printing process most commonly used in modern business offices, usually in large organizations with a central printing department staffed by trained personnel, is offset printing using small presses. Other once-common copying and duplicating processes play a very limited role in today's business office, but they can still be found in some schools and other institutions.

Computer printers-A considerable volume of office computer is via the printer. Among the earliest printers used with PCs in business offices were daisy-wheel and thimble printers. They were slow and could accommodate only text, not graphic materials. As a result, they have been supplemented in most offices by dot-matrix, ink-jet, and laser printers. The laser printer

represents an even greater advance. Similar in technology to a photocopier, it offers speed, high resolution of 300 dots or more per inch, ability to reproduce complex graphics, and silent operation-all of which make it virtually essential for desktop publishing. Microfilm/Microfiche - Although computer-generated documents are usually stored as files [n magnetic tape or disks, both computer documents and paper documents may also be stored on Microfilm or Microfiche. The space needed for document storage in organizations are reduced, and handling and retrieval are simplified by use of Microfilm equipment, which photographically reduces images, producing miniature transparencies that can be magnified for viewing or printing.

2.6. Disadvantage of Information System

Following disadvantages are likely to be there from information systems:

- Automation of workers:-The introduction of new technologies, particularly for automation, sometimes renders some workers' existing skills obsolete. Many industries, including the automobile, steel, insurance, and banking industries, have experienced massive layoffs as a result of intense automation efforts. As a result, while computerization can improve operational efficiency and profits, it can also be the root cause of workforce reduction..
- Information overload: Excessive information generation can overwhelm managers who must digit it and use it to make decisions. This advancement can have a negative impact at times.
- Employee mistrust: Some employees are concerned that computers will eventually replace them. They may be skeptical of information systems unless they are assured that their jobs are not jeopardized..
- Increased competitive pressure: There is increased pressure on small and medium-scale industries, failing which they are steadily being pushed out of the marketplace by larger companies.
- Disillusionment with IS: Many organizations are unable to value information systems and technologies in terms of return on investment. The MIS's ability to deliver on its promises will be closely scrutinized in the coming years.
- Security breaches: When organizations implement new and sophisticated technologies, they must also devise new methods to protect these assets from theft, pilferage, and security breaches. As a result, computers and information systems raise an organization's operating costs.

2.7. The contribution of information technology on decision making in organization

Making wise decisions is an important element of running a successful business. The question then becomes, "How do you make a good decision?" Good information and skill in evaluating data are part of the answer. Making wise decisions is an important element of running a successful business. The question then becomes, "How do you make a good decision?" Good information and skill in evaluating data are part of the answer

All of these features of information technology cannot make decisions for an organization's managers; rather, they assist managers in making their own judgments. They assist managers in obtaining timely and accurate quantitative information on the firm as it is and as it might be in various scenarios. Organizations, for example, use the internet in a variety of ways.

They use the internet for electronic commerce, often known as e-commerce, which includes advertising, selling, buying, distributing, and customer service. Organizations utilize the internet for business-to-business operations like transferring financial data and gaining access to large databases. Voice and video conferencing, as well as other types of communication, are used by businesses and institutions to enable employees to work from home. It facilitates communication between businesses, coworkers, and other individuals.

Information about pricing, for example, and the impact of pricing on items different pricing assumptions can be entered into a spreadsheet to ‘modeling' various pricing methods. This is a lot faster and a lot less expensive than altering prices and seeing what occurs. Photocopiers are used by businesses to transfer the image of an original document on plain paper. Telegraph systems are beneficial for businesses that need to send messages swiftly across vast distances, such as newspapers and railroads. Many firms were able to conduct business abroad for the first time thanks to the telegraph. Telephones provide companies with long-distance communication by transmitting electrical impulses across wires. Security personnel in an organization can use television to monitor buildings, manufacturing plants and numerous public facilities. Public utility employees use television to monitor the condition of an underground sewer line, using a camera attached to a robot arm or remote-control vehicle. Doctors can probe the interior of a human body with a microscopic television camera without having to conduct major surgery on the patient. Educators use television to reach students throughout the world. Because of its speed and informality, an e-mail message is ideal for routine communication between coworkers. An e-mail message, for example, is usually the best way to announce a new policy in an organization, introduce a recent hire, notify colleagues

of a meeting, and remind an employee of an impending deadline. Organizations can be aided in making the best business decisions by using information technology inventions.

2.7.1 Types and Levels of Managerial decision

Decisions exist on a spectrum, according to Herbert A. Simon, with programmed decisions at one end and non-programmed decisions at the other. Programmed decisions are "repetitive and routine to the point where definite procedures for dealing with them have been worked out so that they do not have to be treated de novo (as new) each time they occur." McLeod (McLeod, 1998, p.356)

i. Programmed decisions:

These are standard decisions which always follow the same routine. As such, they can be written down into a series of fixed steps which anyone can follow. They could even be written as computer programme. Also called structure or planned decision), involve situation where the procedure to follow a decision is needed can be specified in advance, therefore, such decision is structured or programmed by the decision may procedures or decision rules developed for them a structured decision may involve what is known as deterministic or algorithmic decision. Structured decision may also involve a probabilistic decision situation, in this case, enough probabilities about possible outcome are known that a decision can be statistically determined with an acceptable probability of success.

ii. Non-programmed decisions:

These are non-standard and non-routine. Each decision is not quite the same as any previous decision. Non-programmed decisions are novel, unstructured, and usually unimportant; there is no cut-and-dry method for dealing with the problem because it has not arisen before, or because its precise nature and structure are elusive or complex, or because it is so important that it deserves a custom-tailored treatment." McLeod (McLeod, 1998, p.356)

(Also known as an unstructured or un programmed decision), Involve decision situations in which it is not possible or desirable to specify the majority of the decision procedures to be followed in advance. Many real-world decisions are unstructured because they are subject to too many random or changing events, or they involve too many unknown factors or relationships. Many decision situations are semi-structured, which means that some decision procedures can be pre-specified but not enough to result in a definite recommended decision. Problems are structured or semi-structured, depending on how familiar the decision maker is

with existing state, the desire state, and the transformation necessary to get from one state to the other. (A. O'Brien, 2003: p.362)

iii. Strategic decisions:

These affect the long-term direction on the business e.g. whether to take over company A or company. Long-term strategic planning is used by top executives to develop overall organizational goals, strategies, policies, and objectives. They also keep an eye on the organization's strategic performance and overall direction (O'Brien, 1996, p. 359)

This is carried out by the most senior management and deals with broad issues concerning an organization's long-term development. A senior executive requires information in order to make strategic decisions. Because strategic planning has a long time horizon, much of this information will be about the future rather than the present.

iv. Tactical decisions:

These are medium-term decisions about how to implement strategy e.g. what kind of marketing to have, or how many extra staff to recruit. Decisions are typically made in less than a year. These decisions typically result in relatively major changes while remaining within the organization's existing structure. The majority of the information used to make tactical decisions is derived from transaction records stored in the computer.

This is a managerial activity that is typically associated with the middle management echelons. Tactical management may include resource allocation within departmental budgets, medium-term work scheduling decisions, and forecasting and planning medium-term cash flows. At the tactical level, information for decision making will refer to the medium term, between now and the next few months or year. It will be primarily generated within the organization, though some external information may be required. Curtis and Cobham (2002, pp.8-9)

v. Operational decisions:

These are short-term decisions (also called administrative decisions) about how to implement the tactics e.g. which firm to use to make deliveries. It includes day-to-day operations and decisions At this level, information technology is used to collect data and perform well-defined computations. The majority of the tasks and decisions are well structured, in that they can be defined by a set of rules or procedures. The collection of data on transactions and operations is an important task of the operational level; thus, a transaction processing system is an essential component of the organization's IS. An important characteristic of transaction processing

system is ability to provide data for multiple users at the same time. As special class of TPS software designed for factory operation is called process control software.

2.7.2. Process of decision making

Knowing and practicing good decision-making techniques is an important part of developing decision-making skills. Those simple decision-making steps describe one of the most practical decision-making methods. These are;

- Determine the reason for your decision. What exactly is the problem that needs to be fixed? Why should it be decided?
- Collect information. What factors are involved in the problem?
- Determine the principles that will be used to weigh the options. What standards and judgment criteria should the solution meet?
- Brainstorm and make a list of different options. Create ideas for potential solutions. See my brainstorming tips page for more information on expanding your options for decisions..
- Evaluate each choice in terms of its consequences. Use your standards and judgment criteria to determine the cons and pros of each alternative.
- Select the best alternative. This is much easier after you've completed the preceding preparation steps.
- Implement the decision. Transform your decision into a detailed plan of action. Put your strategy into action.
- Assess the results of your decision and action steps. What are the lessons that can be drawn? This is an important step in honing your decision-making abilities and judgment.

Last but not least, In everyday life, we frequently have to make decisions quickly, with insufficient time to go through the preceding action and thinking steps. In such cases, the most effective decision-making strategy is to keep your goals in mind and then let your intuition guide you to the best option. (Harris, 2009)

2.8. Problems Associated with the Use of Information System in the Organization

Everything that has an advantage also has a disadvantage. The following are the challenges that organizations that use information technology face:

Computer Crimes

According to Appleby (1994), new technology opens up new avenues for crime, including computer theft, forgery, electronic mail terrorism; electronic data interchange fraud, and the creation and destruction of electronic data by introducing viruses with the intent to commit crimes.

Unemployment

Dologite in international encyclopedia of Business and Management (1996) identified loss of jobs as another problem associated with the use of information technology at least in the short run. Computers now perform multiple tasks that would have needed the payment of more labour, thereby streamlining corporate workforce

Access to computers is unequally

Access to computers is unequally distributed across races, socioeconomic classes, and gender. So, while many people envision a global package with people connected through telecommunication, for many people, the chasm between the haves and the have-nots in society is widening rather than narrowing as a result of widespread literacy.

Computer Hacker

People who illegally gain access to computer systems- often violate privacy and can tamper with or destroy records. Programs called viruses or worms can replicate and spread from computer to computer, erasing information or causing malfunctions. Other individuals have used computers to electronically embezzle funds and alter credit histories**.**

2.9. Characteristics of the Information Infrastructure in the Public Sector in Ethiopia

Information and communication technologies) have the potential to promote inclusive and long-term development. Many countries use information and communication technologies to spur economic growth, innovation, and job creation (ITU, 2011). Ethiopia is one of the countries that sees information and communication technologies as a key driver of social and economic development as well as a facilitator of good governance. Michael and Van Crowder (2001) define ICTs as a set of electronic technologies that, when combined with other technologies, have the potential to transform organizations and redefine social relations. According to Mashinini (2008), Information communication technology policy is a fundamental structure that ensures the proper guidance of various ICT-related services and systems.

Ethiopia began developing its national information communication technology policy and strategy nearly a decade ago, but it was only ratified in 2009. However, no such studies have been conducted to examine Ethiopia's national policy. As a result, despite the numerous opportunities and cross-cutting nature of ICT, these policies are being researched in a variety of fields in Ethiopia. This inspires the researcher to examine Ethiopia's national information communication technolgy policy and strategy, specifically policy issues and policy goals.

Another important area of focus for WSIS and Ethiopian ICT policy is human resource capacity. Human Resource Development is regarded as a strategic policy issue in both WSIS 2003 action line C4 and Ethiopia's National information communication technology policy.

In principle, the public sector is an information-gathering machine. Its primary responsibility is to promote economic and social development while maintaining law and order, collecting taxes, and maintaining certain infrastructure elements. The government is organized into ministries, departments, and statutory bodies. Each entity is concerned with a specific aspect of governance and seeks to deliver on its mandate.

2.10. Conceptual Frame Work

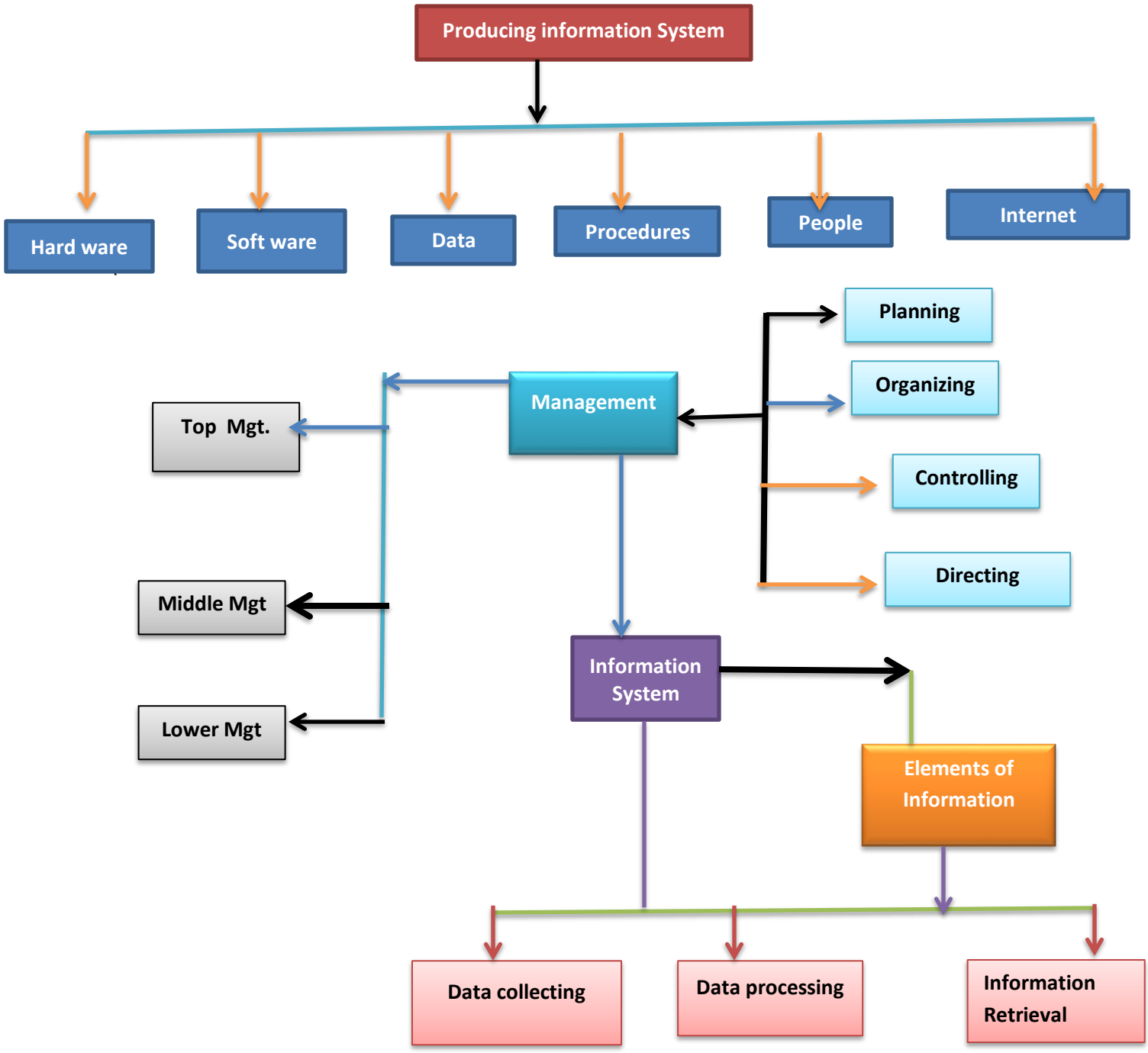


Figure 4: Conceptual framework

Source: Own Survey Data, 2022

Chapter 3
Research Methodology

3.1 Description of Research Area

Addis Ababa city administrative structure was organized into three levels of structure consisting 10 sub-city administrations, 116 woredas, and 842 sub woredas. Nifas Silk Lafto sub city is one of the 10 sub cities in Addis Ababa City Administration. It covers an area of 5876.02 hectares. It situated in the South Western part of Addis Ababa, bounded from the South by Oromia Special Zone, from the North West by Kolfe keranio, from the East by Bole and Akaki Kality and from North by Lideta and Kirkos. At present, the sub city is divided in to 13 woredas 128 sub woredas, 397 sefers, and Nifas Silk Lafto has a total population of 316,283 from which, 148, 984 are males and 167,299 females (CSA, 2007).

1.2.Research Types and Approach

For this particular study, a mixed approach was adopted i.e. both qualitative and quantitative in order to address the research questions raised. However, due to the nature of the study, qualitative approach was predominantly bolded. The main sources of the data and its collecting instruments are a questionnaire of Likert type scale ranging point from 'one' to 'five' (i.e. from strongly disagree to strongly agree) for gathering the quantitative data; and, self-administered and in-depth interview was utilize in order to collect the qualitative data from responsible a heads and the Focus group discussion (FGD) and interview employed to collect evidences of the roll of information system for management on decision making. In addition, the secondary data collected from different sources was used to conduct documentary analysis.

3.2 Sources of data

To ensure the collection of relevant data for this study were collected through observations, questionnaires, FDG and interview. But it was mainly through questionnaires study, both primary and secondary data will be used.

3.2.1 Primary Data

Primary sources of data are first-hand information. The data was generated by the researcher for the purpose of this study to collect the Primary dat. The questionnaires were given to the participant and interview was conducted.

3.2.2 Secondary Data

In addition to the data collected from primary source, extractions was also made from the records and publications of the Nafs Silk Lafto Sub-city their annual report. Extractions are also made from textbooks, magazines, internet, business journals, newspaper, and Library books

3.3. Research Design and strategy.

The study was adopted descriptive research design. This design was chosen to help describe the role information system to management on decision making process by considering the case study at Nfas Silk Lafto Administrative offices. Robson (2002) points out that descriptive study portrays an accurate profile of persons, events or situation. The descriptive design helped to obtain information concerning the current state at Nfas Silk Lafto Administrative offices information system usage while describing, "what existed" with respect to different conditions or variables. Furthermore, the descriptive nature of the research provided detailed information about the research problem. This will provide a general overview giving valuable pointers as to what variables are worth testing quantitatively. The independent variables that guided the research design are the role of information system, quality of decision, challenges of information technology, efficiency of management decision and application information system on the study area. The study determined the role of information system on decision making for management and employee performance in Nfas Silk Lafto Sub-City, Addis Ababa. Based on an association between the variables, a valid conclusion will be derived to show a cause and effect.

3.3 Sample and sampling techniques

In order to draw sample respondents from total population the study was intended to utilize probability sampling techniques. From probability sampling techniques the study was stratified random sampling technique towards selecting respondents from manager and employees of Nafas Selk Lafto sub-City. Then sample size for this study due to the homogeneity of the population and to keep the representativeness of the sample of the population, the researcher used the following formula. Where *e* is taken .05% error level, then the sample size "n" is determined by the equation of Yamane (1967) used because it is one of the best methods in determining the sample size in probability sampling for finite population. Based on this formula reliability, a sample of 103 Nafas Selk Lafto sub-City employees randomly selected out of 140+ 15 higher level up to lower level managers of Nfas Silk Lafto Sub-city and 20*5=

100 customers 80 of them who are service from Woards of the Sub-City. the researcher used a normal confidence level of 95% and an error tolerance of 5%. Therefore, the sample size was determined using Yamen's formula Therefore, the sample size of the study will be:

Where N = Population of workers

n =Sample size (?)

e=Margin of error (5% or 0.05)

n = N 1 + N (e)2

higher level to lower level managing staff $n = \frac{N}{1+N\,(e)2} \quad \frac{140}{1+140\,(0.05)2}$ 103

Customers get service/week $\mathbf{n} \setminus \frac{N}{1+N\,(e)2} \quad \frac{100}{1+100\,(0{,}05)2}$ 80

No	Department	Total	Sample drawn
1	management staff from sub-city	140	103
2	Customers	100	80
3	FGD	Two groups	8 and 7
4	Interviews	2 top officials	2
	Total	255	200

Table 1 Samples of participant

Source: Own Survey Data, 2022

3.4 Method of data analysis and interpretations

The analyzing parts were done based on the source of the data. After gathering the data, the study arranges the collected data in the form of group and summarizes the data by using descriptive technique.

The collected data were representing in the form of tabulation, figures, pie charts, bar graphs and simple percentage. The study was used both qualitative as well as quantitative method of data analysis. Records had been analyzed after all questionnaires were amassed collectively. SPSS became the primary analytical device for this take a look at since the researcher may be very acquainted with it. A possibility became furnished for the consequences that have been

accumulated using questionnaires and interview to be significantly analyzed. The effects have been carefully analyzed using frequency tables, graphs and percentage. The outcomes were discussed in accordance with the studies questionnaires orderly. The researcher based the analysis in this technique because it seems simple and calls for no technical information to interpret and recognize results amassed.

3.4.1 Validity

There are two forms of validity. External Validity and Internal Validity, External validity refers to the research findings data ability to be generalized across persons, institutions, setting and even times. Internal validity refers to the ability of the research instrument to Measure what it is purposed to measure. (Cooper and Schindler, 2003). Does the research Instrument measure what it is claimed to be measured?

3.4.2 Reliability

A comprehensive questionnaire and interview guide will be self-written and revised by analyzing. They presented then present for supervisor review and comments on content, appropriateness and of content and format to ensure validity and reliability. To ensure reliability of research instrument, the researcher pilot study in short time with using a similar category of respondents that is, director, team leader, senior staff, and support staff of public service to check the consistency of the instrument. The reliability will be determined by computing the alpha as in the case of validity and an alpha of CVI of 0.7 will considered the instrument to ensure reliability of the data…Suppose an item 'X' has p=0.67.this means item 'X' was answered correctly by 74% of those who answered the item. To compute reliability with the help of Kuder-Richardson formula number 20, the following formula will be used: KR-20 = N Σ pq 1 – N–1 σ2

Where

N = the number of items on the test, σ2 = the variance of scores on the total test,

p = the proportion of examinees getting each item correct, q = the proportion of examinees getting each item wrong. Kuder-Richardson formula 20 is an index of reliability that is relevant to the special case where each test item is scored 0 or 1 (e.g., right or wrong)

3.3.3 Reliability

Case Processing Summary			
		N	%
Cases	Valid	176	100.0
	Excluded[a]	0	.0
	Total	176	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.786	***18***

Table 3: Respondents' Reliability Measurement Scale

Source: SPSS Reliability Statistics Output, 2022.

The reliability measurement were computed on 176 sample employees' evaluation for the questionnaire items of the primary data set related to the role information system on decision making for management by applying the internal consistency measurement i.e. Cronbach's Alpha. The total average inter-item correlation or Cronbach's Alpha coefficient of evaluation of the overall summary of the cases processing was computed as being ($\alpha = .786$) and the results of each variables' internal consistency measurement i.e. Cronbach's Alpha is presented with the table.

The result computed with Cronbach's Alpha that indicates the internal consistency or the reliability of the data is higher and can be acceptable; that is because, the value of alpha is to be acceptable at cutoff criteria ($\alpha = .70$); and, the more the value of alpha approaches to 1.0 which indicates a better degree of internal consistency or reliability (Nunnally, 1978) cited in (Lance et al., 2006). Thus, the reliability of the measurement scale or the inter-item consistency of the collected data was approximately ***Cronbach's α = .79***, and which can be said acceptable

3.5.Ethical Considerations

Ethical issues will take in to consideration while carried out the study. Hence, permission will be obtained from the informants, respondents and assistant youth before any sort of data collection started. To assure the confidentiality of information, name of the respondents will be omitted from the questionnaire. On the other hand, the objective of this study will clearly explained for the respondents to get verbal consent. Besides, the respondents of the

questionnaire will be also told that the whole process of questionnaire's administration is set up with great confidentiality.

CHAPTER FOUR

DATA ANALYSIS, DISCUSSION AND INTERPRETATION

Introduction

In this chapter, the researcher has attempted to address the research objectives stated in Chapter I through insightful and systematic analysis and interpretation of the data collected from the participants via questionnaire and qualitative data gathered from FDG heads Beuros and experts of Nafas Silk Lafto Sub-City Administration Office in Addis Ababa, Ethiopia. The research objectives are to: (a) To assess the role of information system on decision making Nfas Selk Lafto Sub-city administration (b) To evaluate the practical quality decision made by management in study area. (c) The study intends to identify whether efficiency and effectiveness of mangers increased in the study area as a result of information technology. (D)To identify the problems associated with the application of information system in Nafas Silk Lafto Sub-city administration. Generally, under this chapter, the response rate, the background of the respondents, and the current status of administration how decision is made using information technology and factors affecting decision making processes to implement effective and customer oriented system is used analyzed, discussed and interpreted as follow. In this section, Statistical Package for the Social Sciences (SPSS) version 26 was used for the purpose of analysis and presentation of results. It also presents a discussion of the final results and the process through which the Results were obtained.

Number of questionnaire distributed	Interview	FGD	Number of questionnaires collected	Response Rate (%)
183			176	96.17%
----	2	2 groups (8+7)		

Table 2 Respondents rate

Source: Own Survey Data, 2022

4.1 Demographic Characteristics of Respondents

In this section the demographic information is represented. The respondents gathered for these studies were gender, age, job category, education level, and years of service.

Gender Of Respondent

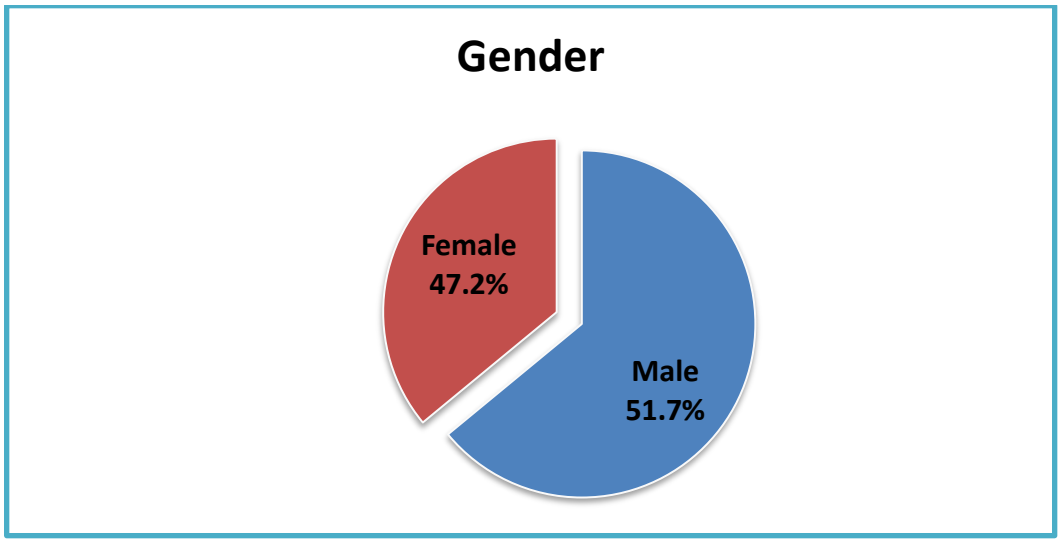


Figure 2 Gender

Source: own data 2022

Based on the frequency pie chart illustrated in the figure above, out of 176 valid cases, the majority 51.7 % (n=92) respondents were categorized under male group; while, the remaining respondents namely 47.2% (n=84) were frequented in female category. This implies that most of the male who engaged in an office in the study area.

4.2. Age Group of Respondent

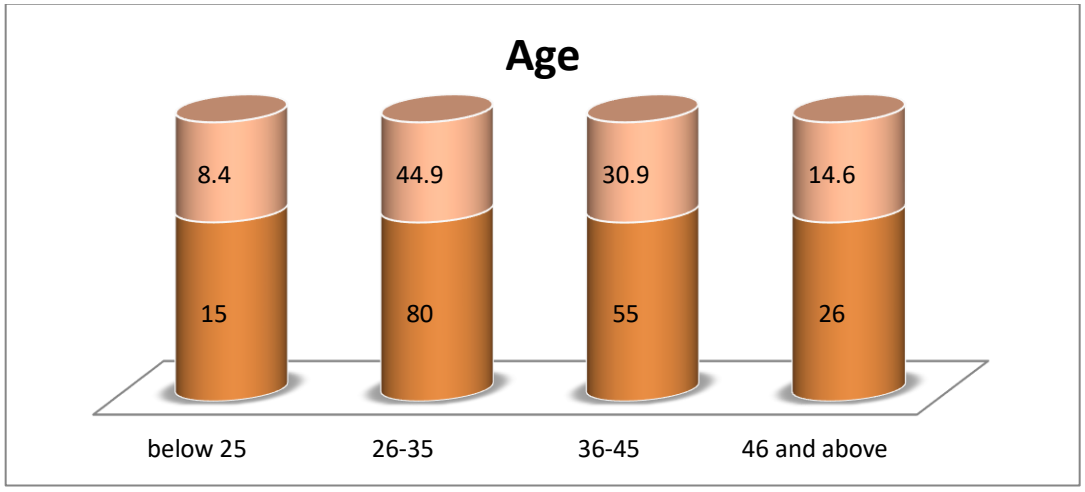


Figure 4: Age Groups of the Respondents
Source: Own Survey Data, 2022

As displayed in the frequency bar chart above, out of 176 valid cases, the majority 44.9 % (n=80) of the respondents were categorized under the age group of 26 to 35 years; while, the remaining respondents fall under the age groups of 36 to 45 years (30.%, n=55), 46 years and above (14.6%, n=26) the remaining part are between below 25 8.4% or n 15 Therefore, the distribution of the respondents on the age groups indicates that most of the respondent who are giving services are between 26—35 in Nafas Silk Lafto sub-city at their productive age this help for understanding the new technology than the other age group.

4.3. Educational Background

According to Agbamu (2006) stated that, formal education has always been known to positively influence the adoption of technology among employer; otherwise they will focus towards traditional way of giving service without having information. So education has a great role in using information technology.

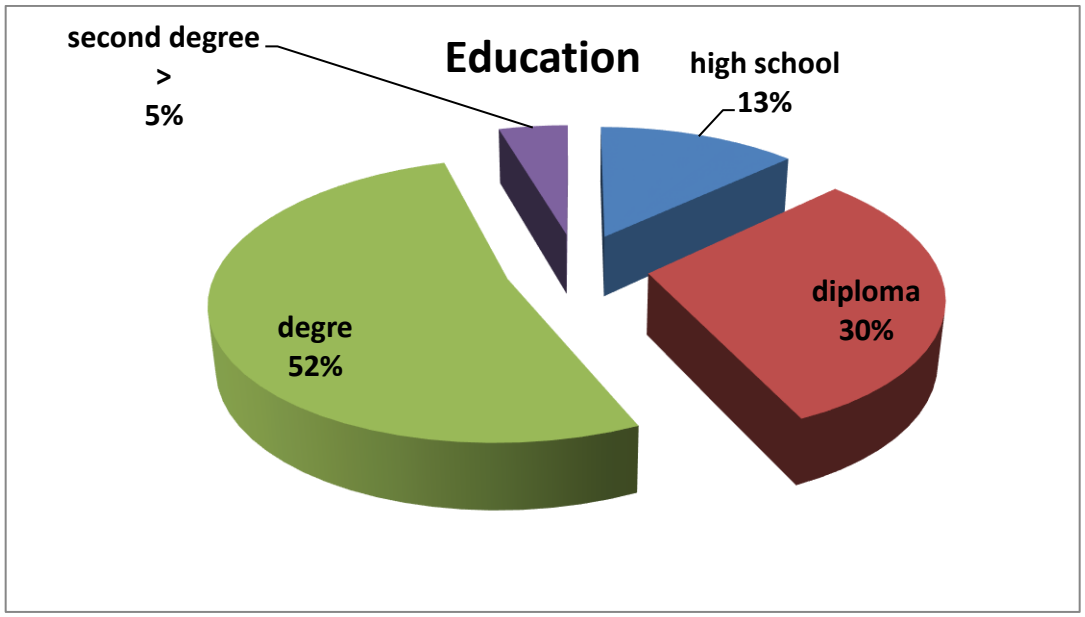


Figure 5: Educational Background
Source: Own Survey Data, 2022

The results in the above pie chart reveal that, 53 almost 29.8 % of have diploma and majority of the respondent are degree holder that is 51 % n (92). Unlike more educated. Education plays a great role to improve work efficiency using information technology and brought customer satisfaction. Knowledge is the information that helps in decision making process of achieving the results of practices that they want to implement. It can be obtained from the education

process or experienced. To be familiar with new technology and science education plays an important role.

4.4. Item related the impact on role of information System on decision making Nfas Selk Lafto Sub-city administration

Q.No.	Variables	Measurement Scale									
		S. Disagree		Disagree		Neutral		Agree		S.Agree	
		Freq.	%	Freq	%	Freq.	%	Freq.	%	Freq.	%
Qi1	There is timely decision making due to the use of information system.	**18**	**10.1**	**74**	**41.6**	**26**	**14.6**	**44**	**24.7**	**14**	**7.9**
Qi2	Most decision made by officials is based on information.	**37**	**20.8**	**106**	**59.6**	**23**	**12.9**	**7**	**3.9**	**3**	**1.7**
Qi3	There is great impact of information technology on decision making in the study area administration.	**4**	**2.2**	**52**	**29.2**	**33**	**18.7**	**76**	**41.9**	**11**	**6.2**
Qi4	As a result of information technology efficiency and effectiveness of mangers increased.	**5**	**2.8**	**95**	**53.4**	**30**	**16.9**	**42**	**23.6**	**4**	**2.2**
Qi5	The application of information system has provided a convenient, accurate, and faster means of processing data in our offices	**10**	**5.6**	**126**	**70.8**	**10**	**5.6**	**26**	**14.6**	**4**	**2.2**
Qi6	The application of information technology Strengthen employee's performance.	**14**	**2.2**	**12**	**6.7**	**17**	**9.6**	**105**	**59.0**	**38**	**21.3**

Table 4 ,
Source: field survey data 2022

Information System is flow-processing procedures based on computer data, and integrated with other procedures in order to provide information in a timely and effective manner to support decision-making and other management functions. The management information system provides information about the organization's relative position and basic forces at work. It gives the right information for decision-making and assists businesses in effectively carrying out their control, planning, and operational functions. The main objective of information

systems is helping decision makers by providing accurate and time based information helping them in making the right decisions in turbulent environment.

Distribution of respondents based on whether there is timely decision making due to the use of information system or not According the table 4 above, 74 of them or 41% of the respondents disagree that there is timely decision made on the contrary 44 of them or 24.7% of the respondent agree the idea of timely decisions if there is information system used, because of lack of usage in information system in their offices decisions were delayed and sometimes it may take longer than expected but in some sectors like taxation, customs, and financial areas using information system very high, and also during FGD of customers approved in those area the service is good but in some area it is not as good as the first one like in authentication service , building maintenance , court and medical services.

Distribution of respondents based on whether there most decision made by officials is based on information or not from 176 collected response 106 of the respondent or 59.6 % of the total population completely disagree 20.8% of strongly disagree 12.9 %were neutrals that decision made by officials is based on information. This shows that there is a problem on decision making which is not based on information, this also confirmed Ato Natsanet Daba the administrator of Nafas Silk Lafto sub city during an interview by in the study area, he added that information system of his office is not well organized and it is one of the area that needed to be improved. He added that tax estimation were made by guessing due to shortage of information, sometimes you might face different amount of tax payment for the same business type. Making wise decisions is an important element of running a successful business. Good information and skill in evaluating data are part of the answer. Making wise decisions is an important element of running a successful business. The question then becomes, "How do you make a good decision?" Good information and skill in evaluating data are part of the answer and this it means by good governess.

Distribution of respondents based on whether there is the impact of information system on decision making in the study area of administration or not 52 or 29.2 % disagreed, 33 or 18.7% were neutrals, 76 or 41.1 % were agreed,11 or 6.2 % were strongly agreed. From this data one can conclude that because of lack of information technology in the study area the impact out it irrelevant .Importance of information system with this information age every parts our life but in the study area the positive influence information technology is not seen that much.

People, machines, procedures, data bases, and data models are all part of the Management Information Systems (MIS) system. The system collects data from both internal and external sources, analyses it, and provides Management Information to help managers make better decisions. As a result, it's acceptable to say that an information system is a network of all communication channels used within an organization.

Distribution of respondents based on whether there efficiency and effectiveness of mangers increased as the result of information technology or not majority of the respondents 95 or 53.4 % of them were disagreed, 42 or 23.6 % were agreed and 16.9% or (n=30) were neutral from this data we can conclude that information system in in the study area has not increased the effective and efficiency of officials.

From the above table 4, the application of information technology has provided a convenient, reliable, accurate and faster means of processing data in the study area responded, out of 176 valid respondent 126 of them or 70% of the respondents indicated disagree, 26 or 14.6 % remains agreed, 1o or 5.6 % were neutrals 4 or 2.2 % of the respondents indicated strongly agree, According to the figure showed above there is no sufficient application of information technology, as a result it minimize the accuracy and reliability of data in Nfas Silk Lafto sub-city. Although information system and the use of computer have replaced for human mind in processing data and help managers and employees to make the right decisions using accurate information and speeding up tasks, the use information technology has been neglected in the study area.

This shows that the application of information technology has provided a convenient, reliable, accurate and faster means of processing data in Nifas Silk Lafto Sub-city administration.

Question related the above table indicated the application of information technology Strengthen employee's performance.12of them or 6.7 % disagree,17 or 9.6 % were neutrals, 105 of them or 59% agreed and 38 of the respondent or 21.3 % strongly agreed with the idea.

4.5. Item Related With the pragmatic quality and challenge using information technology Nfas Selk Lafto Sub-city administration

Q. No.	Variables	Measurement Scale									
		S. Disagree		Disagree		Neutral		Agree		S.Agree	
		Freq.	%	Freq	%	Freq.	%	Freq.	%	Freq.	%
Qii1	There is a problem network and Power interruption to use information system	-	-	4	2.2	8	4.5	121	68	43	24.2
Qii2	There are no sufficient computers in our offices.	2	1.1	4	2.2	3	1.7	128	71.9	39	21.9
Qii3	The government did not gave due attention for IS for office.	5	2.8	7	3.9	49	27.5	101	56.7	14	7.9
Qii4	There is skilled manpower using the technology.	1	0.6	112	62.9	17	9.6	42	23.6	4	2.2
Qii5	The rate of unemployment increased associated IS	6	8.4	92	51.7	41	23	37	20.8	-	-

Table. 5
Source: field survey data 2022

Distribution of respondents based on whether there is a problem network and Power interruption to use information system or not based on the frequency table illustrated in the figure above, out of 176 valid cases, the majority 68% (n=121) respondents were there are problems in both network and power interruption and 24.2 %(n=43) strongly agree the power and network interruption. The issue of network interruptions and power failure a day to day question by customers it is also the idea was raised during focus group discussion ,surprisingly the service are most of the time interrupted due to power cut even there is no generator.

In today's governments all around the world, computer systems play a critical role. Computer technology is especially important in administrative procedures, and it is frequently used to track population numbers and collect census data on a country's residents. Instead of traditional filing cabinets, information about members of a population is stored in secure computer systems, which saves space and allows data to be processed quickly for a variety of purposes. Computerized systems are also used by governments to keep track of taxes and other financial data. Spreadsheets can be used to construct other documents, such as charts and reports that would take much longer to create otherwise. So in the case of Ethiopia especially in the study

area power interruption and other shortage of facility unable to satisfy customers properly ,this become sources of public outcry and compliance for the government service.

With the respect to a question related there are no sufficient computers in our offices, undoubtedly responded 71% (n=128) agreed with the computer and related equipment's shortage and 21.0 %(n=39) of them strongly agreed that computers are rare especially in Keble or Woreada level are not available. Computers aid these workers in completing these jobs because most government offices computers have software such as word processing, spreadsheets, and database management tools. In government offices lack of these computers are also used for e-mail, payment distribution, record keeping every job done by computers.

The pursuit of effective information systems and services use in the public sector will necessitate

Enormous investments by public, private sectors in physical infrastructure, equipment, and training as well as substantial planning and implementation effort (UN, 1985).

Distribution of respondents based on whether there the government did give due attention for Information System for office or not, according the table 56 (n=101) of them agreed, that the government did not give attention and 7.9% (n=14) of them strongly agreed, 27 %(n=27) stayed neutrals, in every sector government did not give full attention. Role of government in the provision of information systems and services those will provide basic education and supporting services.

The most critical component to building a digital economy is skilled human resources. Ethiopia has a large number of young and increasingly educated citizens, but they were lacking the necessary skills to support and participate in the digital economy.

Distribution of respondents based on whether there is skilled manpower using the technology or not the table showed 62.9% (n=112) of them disagree, 9.6 % (n=42) neutrals and 23.6% (n=42) agreed. So according to these statistics many of the respondent responded there is luck of man power particularly in information system and other high take technology, the idea also supported by Vis Administrator of the sub-city Ato Tewedage H/Marim, said:'' There is a problem in skilled man power especially in technology fields'' during an interview held with him. This idea also proved during focus group discussion as well. According innovation and technology minster approved the above idea Ethiopia has a large number of young and increasingly educated citizens, but they were lacking the necessary skills to support and participate in the digital economy. There is no skilled manpower using the technology.

Should the rate of unemployment increased associated information system? This debate had been increasingly heated between employers and employees over the years. As a result, several ethical points of view have been proposed in response to this issue, with ethical egoism believing that companies should not be held responsible for unemployment because by implementing an information system, they will be able to benefit from long-term profit, and thus this is a morally correct action. Here are more IT managers working today than two years ago, but their unemployment rate is rising as well. It's a paradox of government data, but there are theories for the apparent discrepancy.

Distribution of respondents based on whether the unemployment increase because of using information system or not 51% (n=92) disagree,23% (n=41)didn't suggest and stayed neutrals ,20%(n=37) of them agreed that as a result of information system the rate of employment decrease instead of increasing. We can conclude that information system could not be the cause for unemployment rather it creates jobs and brings automation of office work.

4.5. Has the application of information technology enabled the study area to achieve customer satisfaction?

Modern information system technology provides a plethora of options for handling business-to-business relationships and transactions. The majority of these systems are geared toward customer service, and their ability to assess consumer satisfaction is restricted. This is due to the absence of customer satisfaction measuring methods and procedures, as well as the availability of various statistical packages and data analysis programs that address this issue.

Customer service information systems are primarily designed to meet customer needs or to handle customer complaints. Customers' major requirements during transactions with businesses are direct resolution of technical or other difficulties connected to a specific product/service, on-line access to technical or other information offered by the business, and the capacity to provide interactive help. (Loris, 1998)

Q. No.	Variables	Measurement Scale									
		S. Disagree		Disagree		Neutral		Agree		S.Agree	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Qiii1	Information System helped to adopt and respond to the ever changing customer Need	**29**	**16.3**	**95**	**53.4**	**42**	**23.6**	**9**	**5.2**	**1**	**0.1**

Qiii2	There is Quick and timely service delivery in our office service.	**16**	**9.0**	**89**	**50.0**	**30**	**16.9**	**35**	**19.7**	**6**	**3.4**
Qiii3	Information systems has enabled the office to achieve customer satisfaction	**25**	**14.0**	**71**	**39.9**	**38**	**21.3**	**21**	**12.0**	**12**	**6.7**

Table 5
Source: field survey data 2022

Distribution of respondents based on whether the information System helped to adopt and respond to the ever changing customer Need or not 16.3% or n=29 of them strongly disagree, 53.4 (n=95) of them disagree, 23.6% (n=42) neutrals. According to this means that information system of the Nfas Silk Lafto sub-city there is no customer based services delivery system, whenever, Customer orientation business approach that puts the needs of the customer over the needs of the business. Customer-oriented companies understand that the business won't thrive unless it consistently improves customer focus. That is the reality one can see in the study area ,there should be a way of thinking that aligns your business goals with your customers' goals.

Building the expectation of on-time service delivery into your company culture is the first step. Setting deadlines and timetables does not guarantee that services will be delivered on time. At both the individual and collective levels, there must be a profound grasp of the mission-critical role that timely service plays in the organization's success.

Distribution of respondents based on whether there is Quick and timely service delivery in the study area or not,50% (n=89) disagree there is timely service delivery,16.9% (n=30) neutrals, while 19.7% (n=35) of them agreed there is ,this shows that timely delivery of services is not good, these also approved during focus group discussion. This shows that leadership of Nfas Silk Lafto sub-city must design a message that emphasizes the importance of on-time delivery and defends this stance by defining the value of timeliness to customers as well as the dangers associated with failing to deliver on that promise. However, you won't be able to get your teams to buy in purely on the basis of lip service: you'll most likely need to provide them with additional training as well as solutions that address pain spots in service workflows.

Information system has enabled the office to achieve customer satisfaction, 39.9%(n=71) disagree, where us 21.3%(n=38) Neutrals, 14%(n=25)strongly disagree, 12%(n=21) agree and

6.7%(n=12)strongly agree. This information given in the table explains that there is no customer's satisfaction in rendering service in the study area due to information system is not fully utilized. To sustain existing potential customers of the sub-city service there should be a quality, quick and timely service delivery is a necessary condition for any service giving institution. When there is power or telecommunication service Interruption the system fails and leads to dalliance of work. This in turn leads to customer dissatisfaction. If a customer is dissatisfied with the service given by any institution he/she directly switch to another institution, in our case to the question of good governs and lead to public outcry

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter consists of summary of main findings and conclusion of the study and makes appropriate recommendation to the Nfase Silk Lafto sub-city regarding the role of information system for management on decisions making related issues.

5.1. CONCLUSIONS

The management information system provides information about the organization's relative position and basic forces at work. It gives the right information for decision-making and assists businesses in effectively carrying out their control, planning, and operational functions. The main objective of information systems is helping decision makers by providing accurate and time based information helping them in making the right decisions in turbulent environment.

This shows that there is a problem of information on decision making in the study area. Making wise decisions is an important element of running a successful business. Good information and skill in evaluating data are part of the answer. Making wise decisions is an important element of running a successful business. The question then becomes, "How do you make a good decision?" Good information and skill in evaluating data are part of the answer and this it means by good governess it emanate from the right information the right decision maker the right time.

In today's governments all around the world, computer systems play a critical role. Computer technology is especially important in administrative procedures, and it is frequently used to track population numbers and collect census data on a country's residents. Instead of traditional filing cabinets, information about members of a population is stored in secure computer systems, which saves space and allows data to be processed quickly for a variety of purposes. Computerized systems are also used by governments to keep track of taxes and other financial data. Spreadsheets can be used to construct other documents, such as charts and reports that would take much longer to create otherwise. Building the expectation of on-time service delivery into your company culture is the first step. Setting deadlines and timetables does not guarantee that services will be delivered on time. At both the individual and collective levels, there must be a profound grasp of the mission-critical role that timely service plays in the organization's success

5.2 SUMMARY OF FINDINGS

The main purpose of this study was to assess the role that information system has played on the decision making process at Nfas Selk Lafto Sub-city. Based on objective analysis of the results, The following are the main findings of the study.

- ✓ Information systems provide the user with clear information for decision making, but through the answers of the sample we concluded that in Nafas Silk Lafto sub-city finds some difficulties in obtaining information in terms of accuracy, quantity, objectivity, timelines.
- ✓ The decision maker in the study area , when deciding, faces unambiguous, dubious and risky situations, fear of decision-making and other restrictions that can make decision-making process difficult slow it down.
- ✓ The extent to which information is used in organizations has had a significant impact on organizational thought and practice. There is little doubt that developments in information have aided in the streamlining of most offices of study area activities, resulting in increased inefficiency and not cost savings.
- ✓ Digital revolution has radically changed the way financial services and products are offered. But in the study area those components of the information technology includes; Hardware, software, Data and Communication link. Technology has created the digital or internet age is not available.
- ✓ Respondents were not very familiar with internet, emailing, voice messaging and data messaging. This is because the use of the internet and one of its tools like e-mail is still restricted to a few staff (mostly executive staffs).

5.3. RECOMANDATION:

The study recommends the following:

- Conducting awareness campaigns to familiarize users of information systems in facilitating their administrative processes and increasing the effectiveness of their decisions.
- The pursuit of keeping abreast of the development of the systems and information technology used in the sub-city. .

- Establishment of comprehensive databases and information that contribute to the provision of necessary and appropriate data and information in the efficient and effective application of the entrances of modern information systems in institutions to respond to the purposes of modern management.
- Holding training and field courses and seminars to familiarize users of the information system in facilitating their administrative processes and increasing the effectiveness of their decisions
- It is also necessary for all the study area staffs to know how to use the office automation, tools like word processors, electronic spread sheets, computers, printers fax machine and internet training should be given.
- To satisfy the customers need every office of the sub city of study area should have its own generator to minimize the problems related to frequent power interruption.
- To avoid the power interruption of it is better to use alternative power sources.

Reference

Asika, N (1991), Research Methodology in the Behavioural sciences, Longman Nigeria, Lagos

Bartol, M. K. and Martin, D.C. (1998) Management, 3rd Edition, Boston McGraw- Hill. Pp. 605-629

Chanda and Huda, (2003), statistics for management, 3rd Ed; MACMILLAN INDIA LTD.

C.R Kothari (2004) research methodology, method & Techniques, Publishing House pvt.Ltd, New Delhi

Bartol, M. K. and Martin, D.C. (1998) Management, 3rd Edition, Boston McGraw- Hill. Pp. 605-629 Computer science 'Encyclopaedia Britannica Ultimate'. Reference Suite. Encyclopaedia Britannica, 2010.

Conningham, W. Aldy, R and Swift, C. (1984) Introduction to Business Ohio, South western Publishing Co. pp. 429-438

Dologite, D.G 'Information Technology and the Society' in International Encyclopaedia of Business and Management, 1996. Pp.2125-2130

Eke, A (1991) Welcome to Computer Science with Basic Programming Language, Lagos, Acena Publisher. Pp.21-28

Ezigbo, C.A (2003) Advanced Management Theory, Enugu, Immaculate Publications Ltd, pp.117-142

DeLone, W. H., & McLean, E. R. (1992). Information Systems Success: The Quest for the Dependent Variable. Informality Systems Research, 3 (1), 60-95

George M. Scott (1998), Principle of management information system, Nc Graw Hill, New York

Graham Curtis and David Cob ham (2002) business information system, 4th Ed; MC Graw-Hill New York.

Hnery C.Lucas (1997), information technology for management, 6th Ed, MC Graw-Hill international edition New York

James A. 0'Brien (2003), Introduction to information system, 7th Ed, Irwin Mc Graw-Hill, Boston Massachusetts.

James A. 0'Brien (1996), management information system, 5th ed, Mc Graw Hill inc, Boston Bur ridge

Kenneth C. Loudon and Jane Price Luadon (1998), management information system, 4th Ed, Mac Millan Publishing Company, New York.

Kraft, A and Jarret, J (1989), Statistical Analysis for Decision-Making, Massachusetts, Allyn and Bacon

Kornkaew, A. (2012).Implementation Challenges, Success Key Issues, Effects and Consequences: A Case Study of Fenix System, Jönköping . 4

Kroeber, D.W. et al.(1984). Computer-Based Information System: A management Approach, Macmillan, New York,1984.

Lewis, P.S, Goodman, S.H and Fandt, P.M (1998), Management Challenges in the 21st Century, 2nd Edition, South Western college publishing Co, Ohio.

Malonis, J.A 'Information Technology' in Encyclopaedia of Business, 2nd Edition Detroit, Gale Group Inc, 2000. Pp.774-777.

Nath, R. P., & Badgujar, M. (2013). Use of Management Information System in an Organization for Decision Making. ASM's International E- Journal of Ongoing Research in Management And IT, 2 (6), 160-171

Namani, M. B. (2010). The role of information systems in management decision making-a theoretical approach. Information management, 109-116.

Ovia, J. (2000) 'From Banking Hall to E-Platform, the Guardian, Jan. 8, 2001, p.47

Patterson, A. (2005). Information Systems - Using Information. Learning and Teaching Scotland

Post Anderson (2006), management information system, 4th Ed, Mc Grow Hill international edition Boston Massachusetts Bur ridge.

Raymond, McLeod (1998); management information system, 7th ed, prentice Hall Publisher, upper saddle River N.S

Robert schutheis and summer (1998), management information system, 4th Ed, Mc Graw hill Boston Massachusetts Burridge.

Sainbhi S.(2011) .Oil, Gas & Energy Sector.In the Internet:http://sarjeevansainbhi.webs.com/apps/photos/photo?photoid=136220065

Seddon ,S.,Yip, K. (1992).An empirical evaluation of user information satisfaction (UIS) measures for use with general ledger accounting software.Journal of International Systems, 6 (1) (1992), pp. 75–98.

SQL Power (2014).What is Business Intelligence?,Toronto ,Canada. http://www.sqlpower.ca/xbrlpower/page/biprimer

Turban, R. Sharda, D. Delen (2010). Decision Support and Business Intelligence Systems, 9th ed., Prentice Hall Press, Upper Saddle River, NJ. 20. Urbach,N.,Müller, B. (2012).The updated DeLonne and McLean model of information systems success.Link: http://dx.doi.org/10.1007/978-1-4419- 6108-2_1

Vladimir Zwass (1998), foundation of information system, hwin Mc Graw-hill companies, Boston Massachusetts

www.indianmba.com/faculty column/Fc307/Fc307.htm).

www.//en.Wikipedia.org/wiki/management information system

Yamane, Taro. 1967. Statistics, An Introductory Analysis, 2nd Ed., New York: Harper and Row.

ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND

ECONOMICS SCHOOL OF COMMERCE

MA IN HUMAN RESOURCE MANAGEMENT

Dear respondents,

This questionnaire is designed to identify and obtain necessary information for conducting the research on the title "The role of management information system in organizational decision making (a case study of Nafas Silk Lafto sub city cultured art and tourism office). "The information which is provided by you is only to be used for academic purpose; and it is very important for the overall success of the paper. Hence, you are requested to fill and return the questionnaire. The information furnished by you will be kept in strict confidence and you are not expected to write your name on any place on this questionnaire.

Thank you in anticipation for your cooperation!

Please, carefully read each of the following questions and put the tick mark (√) in the appropriate box representing your choice.

1. Gender:- Male ☐ Female ☐
2. Age: Below 25 years ☐ 26-35 years ☐
   35-45 years ☐ 46 years and above ☐
3. Level of education: Below High School ☐ High School Graduate ☐
   TVET Graduate ☐ Diploma ☐ First Degree ☐ Above First Degree ☐
4. Work experience in the office: Below a year ☐ 1 – 3 years ☐ 3-5 years ☐
   6-10 years ☐ Above 10 years ☐
6. Position: Office Head ☐ Process Owner ☐ Case Team leader ☐
   Officer ☐ others----------

SECTION II --Item related the impact of information technology on decision making Nfas Selk Lafto Sub-city administration Strongly Agree(5) Agree(4) Neutral (3) Disagree (2) Strongly Disagree(1)

No	Items	5	4	3	2	1
QI1	There is timely decision making due to the use of information system in the study area.					
QI 2	Most decision made by officials is based on information.					
QI 3	There is great impact of information technology on decision making in Nfas Selk Lafto Sub- city administration.					
QI 4	As a result of information system efficiency and effectiveness of mangers increased.					
QI 5	The application of information technology has provided a convenient, accurate, and faster means of processing data in our offices					
QI 6	The application of information technology Strengthen employee's performance.					

Q2	Items related to the problems associated with the application of information system in Nafas Silk Lafto Sub-city administration					
QII.1	There is a problem network and Power interruption to use information system					
Qii2	There is no sufficient computers in our offices					
Q II3	There is skilled manpower using the technology					
QII4	The government did not gave due attention for information technology in our sub-city					
QII5	The rate of unemployment increased associated with the application of (Information system in our sub-city)					

Please read each statement and put a tick mark (√) in a box which best represents your level of agreement or disagreement with a particular statement

Q3	Items related to Service quality Customer Satisfaction in Nafas Silk Lafto Sub-city administration					
QII1	There is Quick and timely service delivery.					
QIII2	The application of information technology has enabled the office to achieve customer satisfaction					
QIII3	Information technology has enabled the organization to adopt and respond to the ever changing customer Needs/demands.					

15. Would you mention any factors that are blocking a good flow of information to the management?

16. How does the Institution can know either the decision is made effectively or not?

17. What overall comments do you have on the role of MIS on decision making?

Interview Guide

The following questions have been used for in-depth interviews with the respondents

1. Your current position, tasks, responsibilities, etc.?
2. Do you think information system helped the decision making process effectively? in what extent ?
3. Did you have experience with other information systems? How long have you had experience working with this area?
4. What do you think are the main challenges affecting your Sub-City management practice
5. To what extent these challenges affect your day-to-day management practice?
6. What are the major problems encountered in using or adopting these information technologies?
7. What solutions do you suggest for these limiting factors?
8. How frequent interruptions in power and telecommunication service lead the customer disaffection? How can we minimize these problems?