

**ACCOUNTING INFORMATION SYSTEMS AND DECISION MAKING  
A CASE STUDY OF MINISTRY OF FINANCE PLANNING AND  
ECONOMIC DEVELOPMENT**

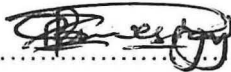
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**A DISSERTATION SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF A  
MASTER'S DEGREE IN BUSINESS ADMINISTRATION OF  
KYAMBOGO UNIVERSITY**

**DECEMBER, 2016**

## DECLARATION

I, Tumwesigye Robert, hereby declare that, the ideas, results, analyses and conclusions reported in this dissertation are entirely my own effort, except where otherwise acknowledged. It is my Original work and has not been previously submitted for any other award in any institution of higher learning.

Signature:  .....

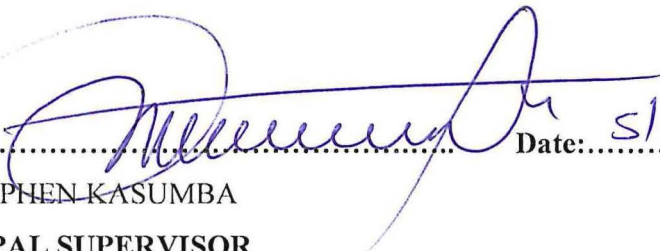
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**APPROVAL**

This is to certify that the dissertation carried out by Tumwesigye Robert, under the title *“Accounting Information Systems and Decision Making, conducted from the Ministry of Finance Planning and Economic Development”* was carried out under our supervision and is now ready for examination by the Board of Examiners as a requirement for the award of a Master in Business Administration of Kyambogo University.

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SECOND SUPERVISOR

## **DEDICATIONS**

I dedicate this piece of work to my mummy for her un-comparable assistance that rekindled my dream to come true. I greatly appreciate all the love and support you rendered me. May the Lord God bless you generously.

## ACKNOWLEDGEMENT

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Signed:  .....

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## LIST OF ABBREVIATION

AIS	:	Accounting Information System
BMAU	:	Budget Monitoring and Accountability Unit
BOU	:	Bank of Uganda
CCS	:	Commitment Control System
CIMA	:	Certified Institute of Marketing
COSO	:	Committee of Sponsoring Organisations
CRF	:	Consolidated Revenue Fund
DQ	:	Data Quality
EAM	:	Enterprise Asset Management
EFMP	:	Economic and Financial Management Project
EFTS	:	Electronic Funds Transfer System
ERP	:	Enterprise Resource Planning
FCCA	:	Florida Caribbean Cruise Association
FINMAP	:	Financial Management And Accountability Programme
GDP	:	Gross Domestic Product
GOU	:	Government of Uganda
HTML	:	Hypertext Markup Language
IFMIS	:	Integrated Financial Management Information Systems
IFMS	:	Integrated Financial Management System
IPPS	:	Integrated Personnel and Payroll system
IPPS	:	Integrated Personnel and Payroll System (IPPS),
IQ	:	Information Quality
IS	:	Information System
IT	:	Information Technology
LGs	:	Local Governments
M/s	:	Microsoft Word
MIS	:	Management Information System
MoFPED	:	ministry of finance planning and economic development
NGOs	:	Non-Governmental Organization
NITA	:	National Information Technology Authority
NTR	:	Non-Tax Revenue Management,
OBT	:	Output Budgeting Tool
PDF	:	Portable Document Format
PFMA	:	Public Finance Management Act
RC	:	Resource Centre
ROM	:	Results Oriented Management
SaaS	:	Software-as-a-service
SD	:	Standard Deviation
SMEs	:	Small Sized and Medium Enterprises
SPSS	:	Statistical Package for Social Scientists
STP	:	Straight through Processing of Salaries
UCS	:	Uganda Computer Services
UK	:	United Kingdom
UPPC	:	Ugandan Printing and Publishing Corporation
URA	:	Uganda Revenue Authority
USAID	:	United States Agency for International Development

## ABSTRACT

The study focused on examining the relationship between the accounting information systems and decision making at MoFPED. It was guided by the following specific objectives to; establish the effect of data entry on decision making at the MoFPED, examine the influence of data presentation on decision making at the MoFPED and assess the effect of data reporting on decision making at the MoFPED.

The study adopted a case study design where both qualitative and quantitative methods were applied in data collection and analysis. The study gathered both primary and secondary data. Primary data was obtained through interviews and questionnaires to randomly selected employees. Secondary data included; MoFPED Resource Centre (RC) which streamlines the flow of information within the Ministry and published reports. Regression analysis was used for the data analysis and drawing inferences from the findings.

The findings revealed that accounting information system is an indispensable tool in decision making. The findings MoFPED revealed that AIS was used to capture data collected, store, manage, process, retrieve and report financial reports, to attain an effective control and coordination of activities. MoFPED adopted AIS in order to support decision system, communication, monitoring, knowledge management and controlling activities. The Ministry used AIS to capture, present data and reporting through financial reports to aid optimal decisions. Reports such as IPPs aided Decisions such as payroll and decentralization management to avoid delayed salaries for civil servants.

The study concludes that, using AIS to capture, present and report quality financial information on a timely basis enhances realization of effective decisions such as implementing performance management and service delivery through decentralization of the payroll. Further still the study deduces that use of AIS requires high level of accuracy in financial transactions and recordkeeping and to make financial data easily available to those who legitimately need access to it, all while keeping data intact and secure in order to balance the diversification of financing, accountability, and autonomy in public entities.

The study recommends that, Management of the MoFPED should impart staff with training and knowledge transfer in using AIS to conduct financial analysis. MOFPED should evaluate accounting policies used in the set time table and it should be revised according to the principal and standard for giving more useful accounting information systems in case of need. There is need to transform AIS in order to meet the challenges due to the funding reform by realigning their organizations with the environment, redesigning themselves to achieve new goals, redefining staff roles and responsibilities, and reengineering their organizational processes.

# CHAPTER ONE

## INTRODUCTION

### 1.0 Introduction

This chapter presents the background to the study, statement of the problem, purpose of the study, objectives, research questions, scope of the study, significance of the study, conceptual framework and the definition of key terms used in the study.

### 1.1 Background to the Study

#### 1.1.1 Historical Perspective

According to Mohamud (2013), the origin of Accounting is traced from the invention of abacus to keep track of business calculations. It evolved during Babylonian civilization 2000 to 3000 BC. Long & Kazeen (2008), considered to be the dissemination of double-entry bookkeeping by Luca Pacioli in 14th century Italy. The process of identifying, measuring, and communicating financial information was documented in the form of paper records, columns of numbers and hand written statements. An accountant had to be a very methodical, detail oriented person, (Balogun, Akinyemi, Okoye,2015). However, the oldest discovered record of a complete double-entry system is the Messari (Italian: Treasurer's) accounts of the Republic of Genoa in 1801(Long & Kazeen, 2008). The accountant's responsibility, therefore, expanded beyond simply recording entries to include the preparation, classification, and analysis of financial statements. As Oldroyd wrote in *The Rise of the Accounting Profession*, "the nineteenth century saw bookkeeping expanded into accounting. (<http://www.managementjournal.info.com>)

Lim (2013) state that, Accounting Information Systems revolved in the early 1950's when the first business AISs became available. According to Saeidi, (2014), reviewing research studies during 1987-1999, found out that the issue of Accounting Information Systems and decision making were of great importance. Early accounting information systems were designed for payroll functions in 1970s. Initially, accounting information systems were predominantly developed "in-house" as legacy systems. Such solutions were expensive to develop and too difficult to maintain.

Laudon, (2006) noted that with accounting technology, e-business allows the accounting firm to coordinate activities for internal management and combines the clients' relationships with the use of digital networks. Enterprise applications were used on internal network called the Intranet. Accounting professionals also communicate outside the organization with Web

technology using Extranet. This allowed the clients to have limited access, linking to a portion of the accounting firm's Intranet to import and export files back and forth. Linking electronically increases efficiency and cuts down on travel costs ultimately reducing operational costs (Laudon, 2006). Accountants became more knowledgeable about which financial systems worked best. Accountants were becoming the IT staff and trusted advisors. An accountant's role was to help these businesses become more productive. Integrating the client's technologies properly with the accountant's systems made the practice more efficient when it came time for write-ups and reconciliation processes ("Searching for Technology," 2009).

Ahim (2013) reveals that across developing countries, many accounting practitioners preferred the manual approach rather than AIS-based. Today, accounting information systems are more commonly sold as prebuilt software packages from large vendors such as Microsoft, Sage Group, SAP and Oracle where it is configured and customized to match the organization's business processes. Small businesses often use accounting software packages such as MYOB and Quickbooks while large organisations often choose Enterprise Resource Planning (ERP) systems, built as a module integrated into a suite of applications that can include manufacturing, supply chain, human resources.

Torgerson, (2007), states that in Uganda Today, accounting information systems are increasingly popular for both SMEs and large organisations for lowering costs. With adoption of accounting information systems, many businesses have removed low skills, transactional and operational accounting roles. Towards the end of the twentieth century the accounting profession began to take on a whole new look. Software-as-a-service (SaaS) is a web based service. The data is permanently stored in huge data centers shared by many other users. Laudon, et al., (2006). The need for adding machines, calculators, ledgers and pencils was eliminated. The need for a file storage room has been eliminated.

### **1.1.2 Theoretical Perspective**

The study was guided by the sociology of information technology theory. Accounting information systems are designed, built and used by people. AIS are components in larger socio-technical networks that include human beings; they are used for various purposes and the success of a system is determined by the AISs users. Hence social and cognitive issues should be addressed in designing, building, evaluating and maintaining AISs in order to influence decision making in an organization. Sadly, AISs built cannot be used as intended

and user dissatisfaction is high. The lesson that accounting information systems are not purely technical objects seems very hard to learn, and very costly to ignore, (Van, Dijk & Jan, 2005).

Parker (2000) argues that, “AIS are emergent outcomes of periods of social interaction between actors who use their powers to try to get their preferences” (Manson et al, 2001; Howcroft, 2006).

Furthermore, the structuring properties of social structures, such information technologies like AIS, have significant control over the actions of human agency (such as ministry officials). However, Giddens further maintains that also human agency can significantly modulate the structuring properties of social structures based on their “stock of accumulated knowledge and purposive intentions...” (Shapiro and Matson, 2008). In this respect, information technologies, as social structures, are “both the medium and outcomes of the practices which constitute social systems” (Dillard, 2004).

Kasumba (2009), notes AIS information technologies are designed to control the conduct of human interactions, but their choices and implementation are influenced by human agency, based on accumulated stock of knowledge, self-interests and societal expectations (Shapiro and Matson, 2008; Lukka, 2007). For instance, the designs of AIS are socially-derived and legitimised as appropriate norms to enhance organisational performance and to control human behaviour but their implementation is influenced by how the human agents interpret and enact the “rules” embedded in the AIS (Stones, 2005). This leads to the duality of information technologies (Dillard, 2004 cited in Kasumba, 2009).

### **1.1.3 Conceptual View**

Alsharayri, (2013), states that, an accounting information system (AIS) is a system of collecting, storing and processing financial and accounting data that is used by decision makers. AIS are generally an AIS-based method for tracking accounting activity in conjunction with information technology resources. The resulting financial reports are used internally by management or externally by other interested parties including investors, creditors and tax authorities. Accounting information systems are designed to support all accounting functions and activities including auditing, financial accounting & reporting, managerial/ management accounting and tax.

AIS provides descriptive and quantitative information which is useful in decision making for users distinct with plurality and diversity. Such users include current and potential investors, lenders, suppliers, creditors, customers, governments and the public in addition to the administration, which is its responsibility to prepare the accounting programs and displaying it, that information must be capable of achieving the goal that it has been prepared for. Hence the role of Accounting Information System for effective decision making cannot be over emphasized, (Grande, Estebanez & Colomina, 2011).

According to Khajavish & Etemadi, (2010) the components of an information system include; marketing and sales system, production, human resource, finance management information system and accounting system. However, even before AISs became widely available; many businesses began to use electronic bookkeeping machines. The escalation of competition in most firms and the need for making intelligent decision has caused organisations to embrace the sophisticated AIS. According to Kermani, (2013), AIS are installed with the idea of identifying, measuring and communicating economic information to permit informed judgment and decisions by users of the information. Accounting information also may help managers understand their tasks more clearly and reduce uncertainty before making their decisions (Adebayo et.al, 2013).

Salleh (2010), states that, effectiveness of accounting information systems can be analyzed on three bases: 1) information scope, 2) timeliness, 3) aggregation. Information scope is considered as financial and non-financial information, internal and external information that is useful in prediction of future events. Saeidi (2014), states that Accounting is a system that provides information concerning the entity to a variety of interested users. The purpose of accounting information is to enable the users to make informed judgments since every decision involves several alternatives. AIS must assist the user to decide his course of action. Some of the management philosophers consider the decision making as foundation and basis of duties of a manager and some consider decision making as one of the main duties of managers.

Alsharayri (2013) states that the objective is to provide necessary information to the managers at different levels. This information helps them in discharging their responsibilities in an effective and efficient manner in the areas of planning, resource control, performance evaluation and decision making. However, The added use of information technology has increased the existence of AIS crimes such as; identity theft, e-mail phishing, AIS hacking,

software piracy, purposefully spreading AIS viruses, stealing AIS files and data, e-commerce sales scams and the list goes on and on.

**Decision-making** is regarded as the cognitive process resulting in the selection of a belief or a course of action among several alternative possibilities. Every decision-making process produces a final choice that may or may not prompt action. Decision-making is the process of identifying and choosing alternatives based on the values and preferences of the decision-maker (Alsharayri, 2013).

#### **1.1.4 Contextual Perspective**

The Ministry of Finance, Planning & Economic Development (MoFPED) derives its mandate and functions from the 1995 Constitution of the Republic of Uganda and other related subordinate laws, including; the Budget Act (2001), the Public Finance and Accountability Act (2003) and acts establishing agencies and auxiliary organisations. Accordingly, the MoFPED plays a pivotal role in the co-ordination of development planning; mobilisation of public resources; and ensuring effective accountability for the use of such resources for the benefit of all Ugandans, (Ministry of Finance, Planning and Economic Development; 2016)

The MoFPED uses IFMIS Modules based on the Oracle, E-Business suite, IT package as its AIS. The AIS modules currently in operation by oracle are: General ledger module, Receivables module, Purchasing module, Payables module and the Cash management module, Fixed Asset Management module, Output Budgeting Tool (OBT) and Ms Excel. IFMIS interfaces with other systems such as the Integrated Personnel and Payroll system (IPPS), URA Revenue systems and Bank of Uganda. IFMIS is an AIS-based budgeting and accounting system that assist GOU entities to initiate, spend and monitor their budgets, process payments, manage and report financial activities. AIS handles critical areas as budget, planning and management, Payments/Payables, Revenue management, Commitment Accounting, Cash Management, Debt Management, procurement and asset management, and Reporting, (MoFPED,2016).

Nevertheless, the MoFPED is not providing timely and accurate financial information for statutory reporting requirements and for decision making in such critical areas as, Purchasing and Inventory/Stock Control, Fixed Assets Management and General ledger. Delayed decision making has ruined MoFPED's performance due to weak accounting AIS characterized by poor presentation of financial statements and failure to handle the complexity of client's orders. This has made problem solving, planning and management

difficult, (The Journal of Uganda Vision, 2025). It was against this background that the researcher conducted a study to examine the effect of accounting information systems on decision making.

## **1.2 Statement of the Problem**

Although the MoFPED uses AIS performance-funding model to save up to 30 per cent of operating budget, the quality of the AIS information has remained untimely, inadequate, immaterial, irrelevant and unfaithful represented to influence efficient quality decisions. The inaccurate and detrimental information generated by qualified accountants using AIS made the cost of providing information exceed the benefits derived, (MoFPED, 2016).

Inefficient utilization of AIS to allocate and align expenditure priorities to the National Development Plan II has hampered realization of Accountability Sector strategic goals. Decisions as to attain full operationalisation of the newly enacted Public Finance Management Act, 2015, automation of the OBT and strengthening budget monitoring are difficult to achieve, (Ministerial Policy Statement, FY 2016/17). Despite the Ministry providing training to 84% of the staff in using AIS, there are still gaps in decision making. Weak data capturing, data analysis and reporting have retarded realization timely settlement of External and Domestic debt service & repayments. This made the Ministry to attain 84% performance (Ministerial Policy Statement, FY 2016/17). Consequently, if the problem continues, providing sound macroeconomic stability, stable inflation averaging 5% per annum, a medium-term fiscal deficit of 3% and an increase in domestic revenue collection by 4% of GDP will be compromised. Hence this prompted the researcher to conduct a study to establish the effect of AIS on decision making at the MoFPED.

## **1.3 Purpose of the Study**

The main purpose of the study was to establish the relationship between the accounting information systems and decision making at MoFPED.

## **1.4 Objectives of the Study**

- i) To establish the effect of data entry on decision making at the MoFPED
- ii) To examine the influence of data presentation on decision making at the MoFPED.
- iii) To assess the effect of data reporting on decision making at the MoFPED

## **1.5 Research Questions**

- i) What is the effect of data entry on decision making at the MoFPED?
- ii) To what extent does data presentation influence decision making at the MoFPED?
- iii) What is the effect of data reporting on decision making at the MoFPED?

## **1.6 Scope of the Study**

### **1.6.1 Subject Scope**

The study focused on examining the relationship between AIS and decision making in Public organizations specifically at the ministry MoFPED. The study specifically looked at AIS as the independent variable which was measured by data capturing/entry, data presentation and data reporting. On the other hand the dependent variable is decision making was measured using Timely, Optimal /rational, Accomplishment of goals, quality and reliability.

### **1.6.2 Geographical Scope**

The study was conducted from MoFPED. The Ministry is located at Plot 2/12 Apollo Kaggwa Road/ P. O. Box 8147 Kampala Shimoni Rd 1, Kampala, Uganda. The Ministry's mission is to formulate sound economic policies, maximise revenue mobilization, ensure efficient allocation and accountability for public resources so as to achieve the most rapid and sustainable economic growth and development.

### **1.6.3 Time Scope**

The problem under investigation was examined for a period of 3years (2014 – 2016) and the literature within the past 10years was applicable for purposes of revealing new and reliable information. The study took a year (January to December 2016).

## **1.7 Significance of the Study**

The study finding may be relevant do different scholars in the following ways;

### **Management**

To empower the decision-making process of financial management, accountability, transparency by filling the knowledge gap and emphasizing the need for integration in the decision-making process of Funds flow from the central government to all public institutions and agencies. The knowledge gap is informed through evaluating the determinants of funding delays and the ability to forecast the delay based on aggregated service delivery data.

### **Government /Policy Makers**

GOU shall use the study recommendations to identify staff responsible for financial management to be sponsored under different such as Economic and Financial Management Project (EFMP II project) to study for professional accountancy qualifications. This training will create a culture of continuous improvement in public sector in AISs through building capacity.

### **Public Agencies and Institutions**

These shall utilize the study results to enhance Capacity building in AIS as a key resource in financial-decision making process. They will be able to recruit and seek support for financial management reforms from specialists with national and international expertise. These resources are expected to transfer knowledge to Civil servants and to ensure the sustainability of the AIS/IFMIS and other fiscal reforms.

Ministry of ICT and National Information Technology Authority (NITA) and Other Affiliated Institutions. These may make use of the study recommendations to improve the capacity of Uganda AIS Services (UCS) in facilitating the enhancement of capacity at MOFPED in order to ensure the availability of a strong IT resource base that can appropriately support the implementation of the AIS across all public entities as well as creating a basis for supporting future IT development in Uganda.

This study will be of great significant to management of various organisations, organizations , accountants, auditors, economist, financial analyst and other users of financial or accounting information, It will give them positive insight about the relevance of Accounting Information System, it key features, advantages, types, it effect on organizational performance, productivity, and profitability, as well as enlightened the general public on the benefits of it application on the organization financial reporting.

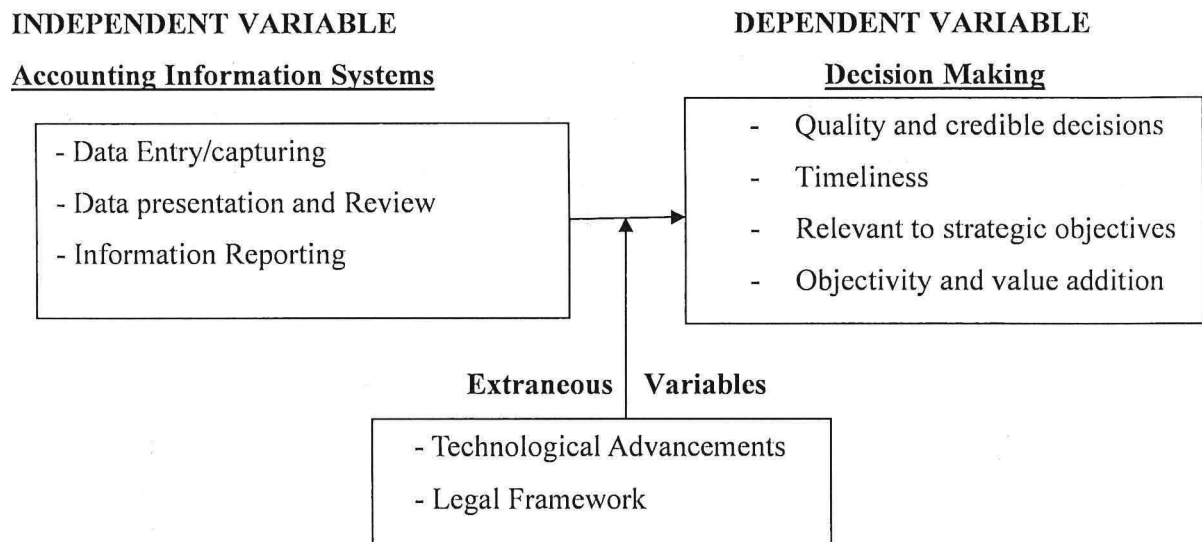
### **Academicians and scholars**

The study will help academicians and scholars to build on research knowledge to form a good source of information and reference notes for further studies in the subject by academicians. This research work will be useful to the people in the academic field, readers, and knowledge seekers and will also be of great relevance to the oil and gas industry in the area of managerial decisions and performance appraisal.

This research work will also contribute to the knowledge of Accountants and other financial managers as it will assist them on effective planning and control in areas of accounting information in making effective management decisions and how to devise strategic moves in meeting with the stated goals and objectives of the organization and the environment at large

### 1.8 Conceptual framework

Managers use the budgeting process throughout the management cycle to help: plan, execute, review and report on the organizations financing, investing and operational activities.



**Source:** Adapted from Grande, Estebanez, & Colomina, (2010); *The International Journal of Digital Accounting Research*, 11(2011), 25 – 43.

**Figure 1: Conceptual Framework model on Budgetary Management and Service Delivery in Public Sector Organizations**

Figure 1 above illustrates the interplay of the independent variable, dependent variable and moderating variables. AIS affect financial performance. From the diagrammatic illustration above, AIS components such as Data Entry/capturing, Data presentation and Review, Information Reporting, However, extraneous variables like legal and Technological factors directly affect both AIS and financial performance.

Quality information is critical to organizations' success in today's highly competitive environment. Accounting information systems (AIS) as a discipline within information systems require high quality data. Empirical evidence suggests that data quality is problematic in AIS. Therefore, knowledge of quality dimensions spelt out on the next page is

important in ensuring data quality in accounting information systems is desirable for effective decision making.

**Table 1: Illustrating the Dimensions of Quality**

Dimensions	Definitions
Accessibility	The extent to which data is available, or easily and quickly retrievable
Appropriate Amount of Data	The extent to which the volume of data is appropriate for the task at hand
Believability	The extent to which data is regarded as true and credible
Completeness	The extent to which data is not missing and is of sufficient breadth and depth for the task at hand
Concise Representation	The extent to which data is compactly represented
Consistent Representation	The extent to which data is presented in the same format
Ease of Manipulation	The extent to which data is easy to manipulate and apply to different tasks
Free-of-Error	The extent to which data is correct and reliable
Interpretability	The extent to which data is correct and reliable
Objectivity	The extent to which data is unbiased, unprejudiced, and impartial
Relevancy	The extent to which data is applicable and helpful for the task at hand
Reputation	The extent to which data is highly regarded in terms of its source or content
Security	The extent to which access to data is restricted appropriately to maintain its security
Timeliness	The extent to which the data is sufficiently up-to-date for the task at hand
Understandability	The extent to which data is easily comprehended
Value-Added	The extent to which data is beneficial and provides advantages from its use

Source: Wanga & Strong, (1996) cited in Onaolapo & Odetayo (2012).

### 1.9 Definition of Key Terms

**Accounting:** Accounting can be defined as an art of recording, summarizing, reporting, and analyzing financial transactions.

**Information:** This can be defined as stimuli that have meaning in some context for its receiver.

In the words of Boocholdt (1999), **Accounting Information Systems** can be defined as systems that operate functions of data gathering, processing, categorizing and reporting financial events with the aim of providing relevant information for the purpose of score keeping, attention directing and decision-making.

**Accounting Information System**, according to Nicolou (2000), is a AIS based system that increases the control and enhances the cooperation in the organisation. Management is

engaged with different types of activities that are requires quality and reliable information. They require also non-financial information such as production statistics, quality of production and so on. However, quality of information generated from AIS is very important for management.

**Management Accounting:** This is an aspect of accounting that is concerned with providing information to management in the areas of planning, decision making and control.

**Decision Making:** This is the process of choosing alternative courses of action using cognitive processes.

### **Conclusion**

This research is designed to contribute to the theory and practice of accounting information systems in influencing decision making in public entities. Hence the purpose of chapter one was to lay a foundation for the study by providing background information and introducing the research problem and research questions. Justifications for this research were provided together with the contributions of the research, thereby providing a basis for the proceeding chapter.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Introduction

The previous chapter introduced the research problem about the study topic. In turn, the aim of this chapter presents is to review literature about Accounting Information Systems and Decision are relevant to the research problem and the specific objectives provided earlier in chapter one. The information is a combination of extracts, paraphrased statements from textbooks, pamphlets, journals, magazines, websites, publications and other official reports.

#### 2.1 Theoretical Review

The study was guided by the Sociology of information technology. This theory argues that technology does not determine human action, but that human action shapes technology. Technological artifacts are culturally constructed and interpreted, (Van et.al, 2005). By this we mean not only that there is flexibility in how people think of or interpret artifacts but also that there is flexibility in how artifacts are designed. The socio-cultural and political situation of a social group shapes its norms and values, which in turn influence the meaning given to an artifact, (Van et.al, 2005).

Wajcman (1991), cited in Kakepoto (2013) & Saskia (2002) asserts that, the technical attributes of the new information and communication technologies (ICTs) increasingly dominate explanations of contemporary change and development. Wajcman (2008) points out, many sociologists see technology as the impetus for the most fundamental social trends and transformations.

According to Kling et.al,(2003), Information Technology (IT) deals with the application of AISs and telecommunications equipment to store, retrieve, transmit and manipulate data, (Ballada & Ballada,2011). This may also be described as anything that renders data, information, or perceived knowledge in any visual format through any multimedia distribution mechanism (Ghasemi & Barvayeh, 2011). Applying in the context of business, it is designed to help management in their stewardship function, support management in their day-to-day operations and decision making.

Yeung & Yue-man (2000), Information technology advancements have greatly helped the accounting systems of business entities. Because of today's accounting information systems, business performance seems to improve. Many transaction processes were simplified thus

creating efficient operations. Information technology advancements made effective and efficient information flow that enhances managerial decision-making, thereby increasing the firm's ability to achieve corporate and business strategic objectives. This in turn, may increase the prospects of the firm's survival, (Yeung & Yue-man, 2000).

The concept of duality of information technology is derived from Giddens' notion of duality of structure. Giddens asserts that the stability and change of social order emanates from the "duality of structure". Giddens maintains that structures have inherent "rules" and "resources". The rules specify what is construed as "correct and appropriate" behaviour (Dillard, 2004). According to Kasumba (2009) duality of structure refers to the role of structure in influencing human actions and vice versa. For example, AIS are construed to be "best practices" of ensuring efficient and effective resource allocation and utilisation in the public sector, (Diamond & Khemani, 2005); and to mitigate corruption and rent-seeking activities (Dorotinsky, 2003). This thinking is based on the determinist approach that seeks to promote efficiency using information technologies that are assumed to rational, technical, universal and unproblematic (Howcroft, 2006).

Twati and Tripoli (2008) also refer to structure as "resources". He categorises resources into: allocative and authoritative resources. Allocative resources are "material resources that are used to attain goals" (Dillard, 2004). In this respect, information technologies have inherent material resources or properties to constrain the actions of human agency. On the other hand, "authoritative resources are "non-material" (human) resources that are used to facilitate goal-directed behaviour" (Dillard, 2004). Thus, in the context of government systems, especially in less-developed countries, there are various actors wielding different authoritative resources that can be deployed to facilitate or constrain the implementation of new information technologies, such as AIS.

The "rules and resources" embedded in AIS have inherent power that is used during the social interactions with the information technologies (Heath, et al, 2000; Orlikowski & Barley, 2001; Dillard, 2004). Power can be seen as both enabling and constraining in the implementation of new technologies (Howcroft, 2006 & Tsamenyi et al, 2006). For instance, Parker (2000) argues that, "systems are emergent outcomes of periods of social interaction between actors who use their powers to try to get their preferences" (Manson et al, 2001; Howcroft, 2006). Thus, social systems, such as AIS, which are outcomes of the agents' interactions, develop and at a certain point in time they become institutionalized (Greenwood

et al, 2002). They would then possess their “causal powers”, which would reside outside the agency that created them (Parker, 2000 & Greenwood et al, 2002).

Furthermore, the structuring properties of social structures, such information technologies like AIS, have significant control over the actions of human agency (such as ministry officials) However, Giddens further maintains that also human agency can significantly modulate the structuring properties of social structures based on their “stock of accumulated knowledge and purposive intentions...” (Shapiro & Matson, 2008; Lukka, 2007). In this respect, information technologies, as social structures, are “both the medium and outcomes of the practices which constitute social systems” (Orlikowski & Barley, 2001; Dillard, 2004).

The structuring properties of social systems, like AIS do not reside outside the actions of human agency, but they are [actions] implicated in their [systems] production and reproduction. The information technologies are designed to control the conduct of human interactions, but their choices and implementation are influenced by human agency, based on accumulated stock of knowledge, self-interests and societal expectations (Jack, 2005; Stones, 2005; Shapiro & Matson, 2008; Lukka, 2007). For instance, the designs of AIS are socially-derived and legitimised as appropriate norms to enhance organisational performance and to control human behaviour but their implementation is influenced by how the human agents interpret and enact the “rules” embedded in the AIS (Stones, 2005). This leads to the duality of information technologies (Stones, 2005; Dillard, 2004; Orlikowski & Barley, 2001).

## **2.2 Conceptual Clarifications on Accounting & Accounting Information System**

According to Avolio, Gilder, & Shleifer (2001), Management is constantly confronted with the problem of alternative decision making especially knowing that resources are relatively scarce and limited. It is therefore pertinent that good accounting information be made available for proper and accurate decision making, maximization of profitability and optimal utilization of scarce resource. Accounting is defined by Webster’s ninth new collegiate dictionary, as “the system of recording and summarizing business and financial transactions and analyzing, verifying and reporting the results. Accounting in view of this study can be defined ordinarily as the means by which managers are informed of both the process and financial status of a business concern, (Alves, 2010)

Warren, Reeve and Fess (2005) defined accounting as information system that produces reports to the interesting parties about economic activities and company’s condition. The

primary objective of accounting is to provide information that is useful for decision making purposes. It means that accounting is an information providing activity.

Taber, Alaryan, & Haija, (2014), conceptualize accounting information as the financial information about economic activities. All economic entities (e.g. businesses, government agencies, families, charitable entities) need such information because it is used for making economic decisions about those entities. An economic event of an entity is referred to as a transaction. Transactions are of two types: external and internal.

Chen et al. (2010) conceptualize accounting as a measurement and communication system to provide economic and social information about an identifiable entity to permit users to make informed judgments and decisions leading to an optimum allocation of resources and the accomplishment of the organizations objectives.

Lim (2013), defines Accounting has been defined as the process of identifying, measuring, recording and communicating economic information to permit informed judgments and economic decisions. The primary purpose of accounting is to help persons make economic decisions. In our society, resources must be allocated among and within all kinds of entities. Accounting information provides the basis for making decisions about resource allocation. To be useful, data must be identified, measured, recorded, classified, summarized and communicated to potential users. These are the critical elements of accounting.

According to Thaer, Taber and Laith (2014) accounting is the process of identifying, measuring and communicating economic information to permit informed judgments and decisions by users of the information. Accounting information is a food for management planning and decision making. It refers to report of relevant financial information regarding the economic activities of an organization or business venture.

According to Wilkinson, (1993), Accounting information include account, balance sheet, cost accounting system, fund book-keeping which dates back to the middle ages and a known description of the system was published in Italy in 1494 by Pacioli a Franciscan Mark Fess and Niswonger. It should be noted that the earlier known use of a complete double try book-keeping was Geneva Kin the year 1840, double entry is the system that requires entries to be made in the books of a business to give effect to both suspects of the transactions. The principal book of this system is the ledger. The advantage of double entry can be stated as

follows: It provides a complete record of every transaction, from both its personal and impersonal aspect, It provides an arithmetical check on the records since the total of the debit entries must equal their total of the credit entries, From the personal accounts the amounts owing to and by each person with whom the business deals can at any time be ascertained? The balance of the nominal accounts can be collected together in a profits and loss accounts, which discloses the results of the operation that is the profit and loss for given period, By means of a balance sheet in which the balance of accounts representing capital, assets and liabilities are set out, the financial position of the business at any given moment can be ascertained, With a reliable system of internal organization it reduces the risk and facilitates the detection of errors and fraud, (Shanker, 2013).

Shehzad & Ismail (2014), state that, accounting information provides management with the needed information for use in concluding the affairs of the business and reporting to the owners. Five ingredients of accounting system, according to Black et al are: Basic business documents or forms such as cheque and invoice, Journals in which the effect of transaction on assets and equities are analyzed in terms of debit and credit, Ledger, which shows that results of transaction as summarized according to each asset or equities, The financial report which reports on how enterprise scared for that period and the procedures for preparing these records and report.

Azizi (2009) noted that, if management of any business makes implementations based on their accounting information, they will execute plans, controls and make decision making very effective. Over the past twenty years the nature of business organization has changed dramatically. Accounting information technology has revolutionized the ways in which information essential to the management in their decision making is processed.

### **2.2.2 Concept of Accounting Information**

Ballada and Ballada,(2011) defined accounting as information system that produces reports to the interesting parties about economic activities and company's condition. The primary objective of accounting is to provide information that is useful for decision making purposes. It means that accounting is an information providing activity. Ballada and Ballada also stated that the objective of accounting is simply to produce information used by managers to run company's operation. Accounting also gives information to the interesting parties about economic performance and company's condition.

According to Dandago and Rufai (2013), accountings role is to gather data about a business's activities, provide a means for the data's storage and processing, and then convert those data into useful information. An accounting system consists of the personnel, procedures, technology, and records used by an organization (1) to develop accounting information and (2) to communicate this information to decision makers (Sori, 2009). Accounting information is raw data concerning transactions that have been transformed into financial numbers that can be used by economic decision makers. Sori (2009) also stated that accounting information is knowledge or news about a reckoning of financial matters. Accounting information is central to many different activities within and beyond an organization.

Accounting information is essential to business operations. According to Williams et al. (2008), the types of accounting information that a company develops vary with such factors as the size of the organization, whether it is publicly owned, and the information needs of management. The types of accounting information required depend on the types of business decision made by management. It means that the role of accounting information is assist manager in making business decisions.

Fiorelli, Zifaro (2008) in Handayani (2011), classified accounting information in to three different types according to the benefits for the users: Statutory Accounting Information is the information shall be prepared in accordance with existing regulations; Budgetary Information is the accounting information presented in the form of budget that is useful for internal planning, assessment, and decision making and Additional Accounting Information is other accounting information prepared by the company in order to increase the effectiveness of decision.

## **2.2 Concept of Decision Making**

Decision making is the study of identifying and choosing alternatives based on the values and preferences of the decision maker. Making a decision implies that there are alternative choices to be considered, and in such a case we want not only to identify as many of these alternatives as possible but to choose the one that best fits with our goals, objectives, desires, values, and so on (Harris, 2008).

Harris (2008), also mentioned that decision making is the “process of sufficiently reducing uncertainty and doubt about alternatives to allow a reasonable choice to be made from among them.” According to him, decision making emphasizes the information gathering function. It is where uncertainty is reduced rather than eliminated. In addition, very few decisions are

made with “absolute certainty because complete knowledge about all the alternatives is seldom possible. Thus, every decision involves a certain amount of risk”.

According to Baker et al. (2001), decision making should start with the identification of the decision maker(s) and stakeholder(s) in the decision, reducing the possible disagreement about problem definition, requirements, goals and criteria.

Decision making the selection from among alternatives of a course of action is at the core of planning. A plan cannot be said to exist unless a decision - a commitment of resources, direction, or reputation – has been made. Until that point, we have only planning studies and analyses. Managers sometimes see decision making as their central job because they must constantly choose what is to be done, who is to do it, and when, where, and occasionally even how it will be done. Decision making is, however, only a step in planning, even when done quickly and with little thought or when it influences action for only a few minutes. It is also part of everyone’s daily living. Planning occurs in managing or in personal life whenever choices are made in order to gain a goal in the face of such limitations as time, money, and the desires of other people.

Harson, Kernut (2005), argued that accounting is a service activity, the reports of which are used in describing the activities and financial states of many different kinds of economic activities. According to Glantier and Underdown (2002), accounting is moving away from its traditional procedure base, encompassing record keeping and such related work as the preparation of budget and final accounts, towards the adoption of a role, which emphasizes its social importance.

Littleton (2003), observe that the central purpose of accounting is to make possible the periodic marching of cost efforts and revenues accomplishments. This concept involves fixed point of accounting theory, and a bench mark that afford a fixed point of reference for accounting sessions. Accounting is the art of recording, classifying and summarizing in a significant manner and in terms of money, transaction and events, which are in part at least of a financial character, and interpreting the result thereof.

Benjamin (2008) reported that the primary function of accounting is to accumulate the communication information essential to understanding the activities of an enterprise, whether large or small, corporate or non-corporate, private or public. Anderson and Caldware (2001), suggested that accounting is an information system for measuring, processing and

accounting information system, financial accounting, and auditing in the organization's context. To evaluate an administrative control system these following steps need to be considered: Identify potential control areas, Define system objectives, Document the system, Evaluate the system.

Ballada and Ballada (2011) in his study used the first part of the statement as measure of control for management and the second part for evaluating the effectiveness of the accounting information via continuous monitoring. Kim (2009) argues that the usage of accounting information depends on the quality of information by the user. Quality of information depends on reliability form of reporting, timeliness and relevance to the decision. Appiah, (2011), observe that time factor in accounting information is very important in the case of periodicity concept which defines a specific interval of time for which an entity's report is prepared which can be a fiscal year, natural year, quarterly or even monthly.

### **2.2.2 Decision Making Process**

According Dandago & Rufai (2014), Decision making is defined as the process of determining the direction of an organisation to achieve its stated strategic goals. Decision making is concerned with making a choice between alternatives and frequently an important factor in making that choice, is the financial implication of the various alternatives (Beke, 2010). Decision making is the process through which course of action is selected as the solution to specific problems. Today, organisations are less focused on the market but on strategic management that is dealing with decisions and actions that determine the long survival of the firm. According to Daw and Teru (2015), a researcher on decision making in public enterprise, the technical duality of decision making has to be distinguished from the acceptability of the decision by the parties involved, for instance doing the right. Decision making has received increased attention in recent years, and some authorities have argued that management and decision making are synonymous terms. Indeed, there is little managerial activity, which does not involve decision making on effective and adequate

### **Types of Decision Making**

Different problems require different types of decision making. Routine or minor matters, such as a return of merchandise, can be handled by a set procedure. While others need, a specific solution created through a less structures process of decision making and problem solving (Mancini and Renata, 2013). Programmed decisions According to Stoner (2010), these decisions are made in accordance with written or unwritten policies, procedures or rules that

simplify decision making in recurring situations by limiting or excluding alternatives for example, managers rarely have to worry about the employee's salary because organisations generally have a salary scale for all positions. Thus, routine procedures exist for dealing with routine problems. Programmed decisions are used for dealing with recurring problems whether complex or un complicated. If a problem recurs, and if its component element can be defined, predicted and analyzed, then it may be a candidate for a programmed decision making. For example, decisions about how much inventory of a given product to maintain can involve a great deal of fact finding and forecasting, but careful analysis of the elements in the problem may yield a series of routine, programmed decisions (Aslani & Barvayeh, 2006).

According to Gibson, (2007) programmed decisions limit freedom because managers have less latitude in deciding what to do. However, programmed decisions are actually intended to be liberating. The policies, rules or procedures by which we make programmed decisions save time; allowing managers to devote much attention to others, move important activities. For example, deciding on an individual basis would be time consuming and costly, but a policy stating "exchanges will be permitted on all purchases within 14 days" simplifies matters considerably.

### **Non-programmed decisions**

Iselin, (2006) argued that non-programmed decisions deal with the unusual or exceptional problems. If a problem has not come up often enough to be covered by a policy or is so important that it deserves special treatment, it must be handled as a non-programmed decision. Problems such as how to allocate an organisations resources, what to do about a failing product line, usually require non-programmed decisions. Stoner argues that most management development programs try to improve management's ability to make non-programmed decisions, usually by teaching them to analyze problems systematically and logically.

According to Ismail, (2007), there are sequences of events that lead to decisions solution. A rational approach can be applied to the business of the reading decision in an organisation, by seeking to ask the right questions, and it continues by encouraging creative answers. It continues by ensuring that the chosen solution is monitored and evaluated.

### **Identifying objectives**

Before good decisions can be made, there must be some guiding aim or direction that will enable the decision makers to assess the desirability of favoring one course of action over the

other. Different firms have got different objectives (Iselin, 2006). Khanagha, (2011), believes that businessmen are content to find a plan that provides satisfactory profits rather than to maximize profits. Because managers have limited powers of understanding and can deal with only limited amount of information, at a time, they tend to search for solutions only until the first acceptable solution is found. According to Iselin, (2006), they believe that management should have wider responsibilities and must still be able to analyze a decision from a shareholder's point of view if it's to strike a proper balance between their interests, those of consumers and employees.

### **The Search for Alternative Courses of Action**

This involves a search for a range of possible course of action that might enable the objectives to be achieved. If the management of a firm concentrates entirely on its present products range and market, and cash flows are allowed to decline, there is a danger that the firm will be unable to generate sufficient cash flows to survive in the future (Collin, 1999 cited in Khanagha, (2011)). According to Edward, 2000, to maximize future cash flows, it's essential that management identifies potential opportunities and takes specific steps immediately so that the firm will not be taken by surprise by any development, which may occur in the future. The search for an alternative course of action involves the acquisition of information concerning future opportunities and environment. But according to Cyert and March 1969, firms will in practice consider only a few alternatives, with the search process being localized initially.

### **Selecting Appropriate Courses of Action**

Charles Hornygren et al., (1999), decision making is essentially choosing among several forces of action. The available actions are determined by an often time consuming formal or informal search process, perhaps carried on by a company team that includes engineers, accountants and operating executives. Accountants have an important role in decision making process, not as decision makers but as collectors and reporters of relevant information. According to Gilbert (2000), decision making involves choosing competing alternative courses of action and selecting the alternative that best fits the objective of the organisation. For example if the objective is to maximize future net cash flows, the alternative selected should be based on a comparison of the difference between the cash flows.

### **Implementing of the decision**

Once the alternative courses of action have been selected, they should be implemented as part of the budgeting process. The budget is a financial plan for implementing the various decisions that management has made. The budgets for all the various decisions are expressed in terms of cash inflows and out flows and sales revenues and expenses. The master budget consists of the budgeted profit and loss account, cash flow statement and a balance sheet. The budgeting process communicates to everyone in the organisation the part that they are to play in implementing management's decisions (Drury, 1999 cited Meyer, 2007).

### **Comparing actual and planned out comes and responding to diversions from plan**

The final stage in the process is to compare the actual and planned results and responding to divergences from the plan, represents the firm's control process. The managerial function of control consists of the measurement, reporting and subsequent correction of performance in an attempt to ensure that the firm's objectives and plans are achieved, (James Stoner, 2000). To monitor performance, the accountant produces performance reports and presents them to the appropriate managers who are responsible for implementing the various decisions. Performance reports consist of actual results and planned out comes. Such reports should highlight those activities that do not conform to plans, so that managers can devote their scarce time to focusing on these items (Muhindo, Mzuza & Zhou, (2014).

### **Behavioral aspects of decision making**

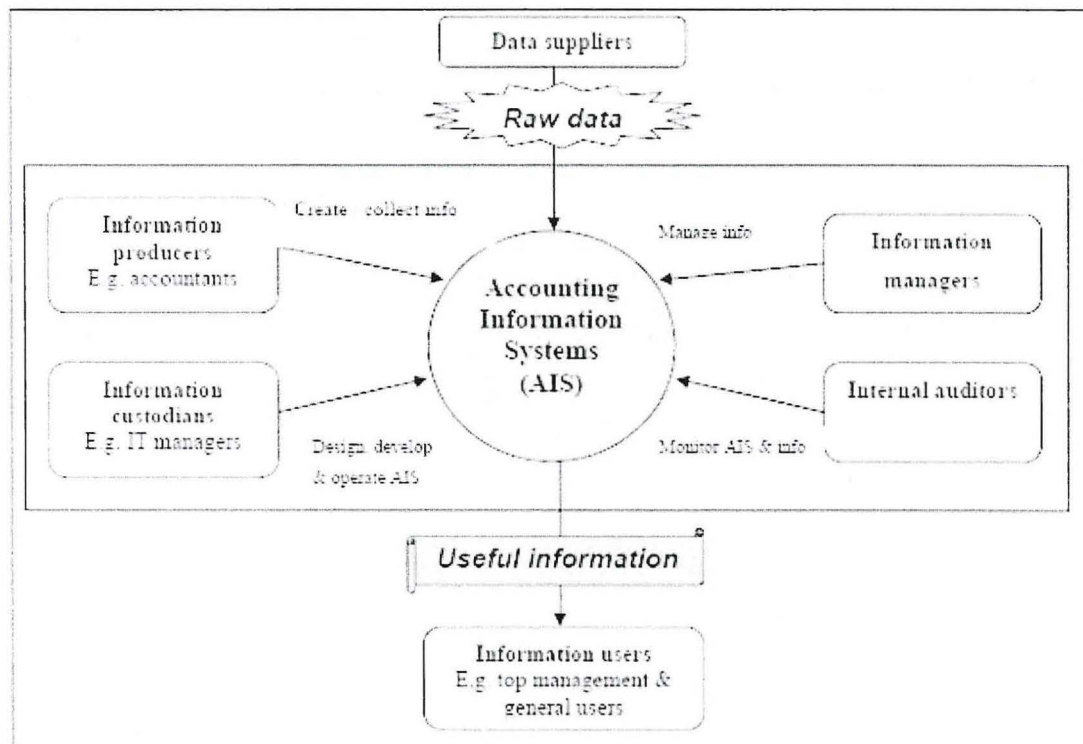
From a management point of view, the purpose of accounting information systems is to enable the organisation to attain its goals. It must follow that the effectiveness of accounting information is evidence in the manner in which it affects behavior. In this sense, unless accounting information produces the desired action, it has served no purpose at all. Research shows that even when managers have all the information that they needed they do not always make good decisions. Hence the human process which leads managers to recognize or fail to recognize the significance of accounting information deserves a better understanding and accountants need to be aware of the role of accounting information to enable managers identify their mistakes and learn them (Weihrich,2000)

Decision is a reasoned choice among alternatives (Turban and Aronson, 2001). According to Jones and George (2011), decision making is the process by which managers respond to opportunities and threats that confront them by analyzing options and making determinations about specific organizational goals and courses of action. Thus, it can be said that business decision is a reasoned choice among alternatives respond to opportunities and threats that

confront them by analyzing options and making determinations about business goals and courses of action. According to Romney and Steinbart (2012), businesses engage in a variety of activities. Each activity requires different types of decisions. Each decision requires different types of information. Business decision related to what activities will be accomplished as well as what information is needed. Romney and Steinbart (2012) stated that there is variation in the degree of structure used to make decisions: (1) Structured Decisions are repetitive, routine, and understood well enough that they can be delegated to lower-level employees. (2) Semi Structured Decisions are characterized by incomplete decision making rules and the need for subjective assessments and judgments to supplement formal data analysis. (3) Unstructured Decisions are non-recurring and non-routine decisions.

### 2.3 Data Capturing and Decision Making

Effah & Abor(2010) reveal that AIS helps institutions to analyse data captured to provide management with information useful for decision making: AIS provides forms of reports that fall into two main categories: financial statements and managerial reports. To collect and store data about the organization’s activities and transactions efficiently and effectively: Capture transaction data on source documents, Record transaction data in journals, which present a chronological record of what occurred, Post data from journals to ledgers, which sort data by account type.



*Source: Data Capturing and Decision Making by Effah & Abor (2010)*

*Figure 2: Illustrating the relationship between stakeholders and AIS*

The data processing cycle consists of four steps: Data input, Data storage, Data processing and Information Output. After transaction data has been captured on source documents, the next step is to record the data in a journal. A journal entry is made for each transaction showing the accounts and amounts to be debited and credited. The general journal records infrequent or no routine transactions. Specialized journals simplify the process of recording large numbers of repetitive transactions. A subsidiary ledger records all the detailed data for any general ledger account that has many individual subaccounts, (Chen, 2010).

The framework components and their interrelationships are shown in Figure 2 above in accounting information systems, different stakeholders have different functional roles in relation to the quality of the information. The framework relates all stakeholders to accounting information systems on three different levels. The lower level has only one stakeholder group - the data suppliers who provide unorganised raw data to the AIS. It represents the input stage, which is getting raw data into the AIS. In the middle level, there are four stakeholder groups, namely, information producers, information custodians, information managers, and internal auditors, who are responsible for creating and collecting the information, designing, developing and operating the AIS, managing information, and monitoring AIS and information respectively. This important level contains the processing, storing, maintaining, and monitoring stages. The final and highest level distributes the organised, useful information to the information users, and it is the output stage, (Thaer et.al. 2014)

Accounting information system consists of a set of items, equipments, processes and /or people working jointly with an aim of achieving common goals. It accepts inputs, manipulates them and produces results. Intermediate results or data may be stored. The control of the system modules is to be effected for optimal operation, (Sori, 2009). AIS is a combination of both hard ware and software that is used to capture, input, process, output and store accounting information. A AIS should be able to input, process, output and store information, (Sori, 2009). Accounting system can be defined as a method of accounting used by the organization to input and output financial data. According to Saleemi (2001), like any other system a AIS accounting information system is composed of the inputs, processes, output, and storage and system control.

### **2.3.1 Input**

According to Shanker (2013) data to be processed in to information, must first be collected and communicated from the external environment in to the system by the input function. And

that the nature of the input is influenced by the nature of the system such as the day's total sales in the source documents.

According to Thaer, Taber and Laith (2014), data entry clerk reads data in to the input device using a keyboard. Input data such as sales transactions data are normally recorded in transaction files. These represent books of original entry used for recording most business transactions. The key data must be verified to ensure, to the extent possible, that erroneous output. In most applications data on original input document are transferred to an intermediary document such as magnetic dick before being fed in to the AIS. They are input once only as they enter the system. Documents are checked coded, perhaps written. Capturing transaction data on source documents or capturing transaction data by means of input devices such as keyboard, magnetic ink character reader, optical scanner and others. If transaction data is to be captured reads directly and must be encoded in machine readable form before processing can begin, (Shehzad & Ismail, 2014).

### **2.3.2 Process**

According to Abu-Musa (2004), after the data is collected and prepared in to a medium suitable for the input, it is then ready for processing function, in which the input raw data is manipulated into information using the input procedures or instructions. For instance, functions of billing, accounts receivable and inventory control are integrated in the AIS sales order application. These functions are performed by the AIS department from the input data provided on the sales order. Completed sales order are forwarded to the AIS department, key punched, and the resultant transaction is used in an integrated series of AIS runs that produce invoices, update the accounts receivable file and update the finished goods inventory, (Shehzad & Ismail,2014).

Shehzad & Ismail (2014), Processing involves the use of journals and registers to provide permanent and chronological record inputs, the entries are done by a data entry operator using a AIS system. Processing transactions may be immediately after being captured or after a period of time has elapsed, it may be in random order or sorted batches. If transactions are to be processed in batches, sorting the transactions by a magnetic tape merging process or by means of a utility sort routine. According to Shaheen (2012), a general ledger procedure is perhaps the most intergraded within an accounting information system, since it draws together the data from sales, each receipt, payables, cash disbursements and related transactions are posted on the general ledger. At the end of each day, period, data from payroll transactions are added similarly at the end of each month, data from adjusting entities

are included instructions are obeyed and the necessary arithmetic operations are carried out on the data. The part that does this is the erythematic and logic unit. These operations take place at incredibly high speed (Saira, et al., 2010)

### **2.3.3 Storage**

According to Saira, Zariyawati & Annuar, (2010), storage forms a major component of the accounting information system as the stored data forms the basis for the information systems. To Romney et al., (2003), no single medium is best suited for both type of applications for instance file such as the finished goods inventory may be stored on magnetic disks. Files used in processing payrolls and cash disbursements could well be stored on magnetic disks. Ledger files provide storage of data in AIS systems. The general, account payable and account receivable ledger are the records of final account. They provide summarization of a form's financial accounting transactions. All accounting transaction files usually contain data that is of temporary rather than permanent interest. For instance, a master file contains data that is of a more permanent interest. The purchase ledger balances may be input to be processed ion to updated form of new purchase ledger balances (Saira, Zariyawati, & Annuar, 2010).

### **2.3.4 Out put**

This is the final function of accounting information system; it involves the communication of the derived information after processing, to the external environment to the recipient users or to another data processing system. This information is usually in form of business documents such as statements, invoices, pay slips among others, (Saira et al. 2010).

A variety of documents, statement and reports are generated either during processing runs or during special report generation runs. The key document being a sales invoice another document is the customer monthly statement, is prepared at the end of the month from data appearing in each customer's master record. At the end of each processing accounting period the general ledger is processed to close the temporary accounts and to prepare various listings, reports and financial statements. The end of period may include; a general ledger, trail balance, current general ledger report comparative general ledger, income statement, balance sheet, statement of sources and applications of funds and responsibility accounting report (Salleh et al. 2010).

Muhindo, Mzuza & Zhou, (2014) noted that, in AIS systems, the output function decodes the machine-readable data in to human readable form so that they are meaningful to users. Output may be a financial statement, a managerial report, an output document such as a

customer invoice or pay check or a graph. The output medium may be paper, microfilm, a video display unit or possibly voice synthesis. Sometimes the output from the system is in a machine-readable medium forming the output to another AIS and the interface with an end user is deferred to some later processing stage. There's a wide variety from a transaction processing system. As with input, output may take many forms, the AIS system may print reports or business forms, create new punched cards and update tape files and disk files.

Boochholdt (1999), defines accounting information systems (AIS) as a system that operate functions of data gathering, processing, categorizing and reporting financial events with the aim of providing relevant information for the purpose of score keeping, attention directing and decision-making. Accounting Information Systems are considered as important organizational mechanisms that are critical for effectiveness of decision management and control in organizations.

Ammar and Yeop (2011), pointed out that the use of AIS saves organizations time and money. That is AIS makes inputting accounting information simple. Transactions are entered into the system and the system processes and posts transaction accordingly. Likewise, AIS reduce staff time preparing accounts and reduce audit expenses as records are neat, up-to-date and accurate. More importantly, the system helps present financial reports on time to aid the economic decision making process of external users.

According to Dandago and Rufai (2013), AIS is a set of interrelated subsystems that work together to collect, process, and store, transform, and distribute information for planning, decisions making and control. The use of AIS in information systems can improve the efficiency of information collection, processing, storing, transformation and distribution. It is very important for business entities. This is the one responsible in generating reliable financial information needed for decision making.

Osmond (2011), asserts that data is also captured in a general ledger accounting model because it is applicable to all information systems, regardless of the technological. The elements include end users, data sources, data collection, data processing, database management, information generation and feedback. According to Osmond (2011), General Ledger Module is an account book made of all the asset accounts, liability accounts, equity accounts, revenue accounts and expense accounts. It involves the maintenance of journals in

the ledgers on the recording and classifying the financial transactions. It usually extends the preparation of the trial balance and the formal financial reports.

Nasrin (2010), noted that, although specific implementations of a AIS may vary, AIS generally conform to the long-established paradigm of a general ledger comprising a plurality of accounts. Typically, the general ledger is implemented as AIS database, with each general ledger account and each transaction being assigned a unique reference number. In addition, Hall (2010), said that a AIS can comprise: a host accounting system, which stores, in a general ledger database, transaction data representing financial transactions that occur over a time period; an overlay system, which enters overlay adjustment data representing adjusting journal entries related to the transaction data stored in the general ledger database; a host report system, which creates host reports based on the transaction data stored in the general ledger data set; and an overlay report system, that generates a first overlay report based on the transaction data stored in the general ledger data set, (Santamaría,et.al,2010).

Institutions must maintain, to the maximum extent possible, a general ledger that complies with OMB and Treasury publications on the Standard General Ledger for the Government. While system capabilities cannot currently meet this requirement, all new system designs *must* incorporate the requirement for a general ledger and the firm *must* be capable of consolidating all accounting information into a single general ledger for the organization, (Sutton, 2010).

Sangster, (2008), lamented that, Production of auditable financial statements and strategic management planning/performance requires the consistent application of standardized accounting principles and maintenance of the Standard General Ledger module. An Intuitional policy is to continuously improve general ledger capabilities for financial statement purposes and to implement general ledger requirements at levels that will strengthen management controls and comply with existing legislation. All individuals involved in financial management operations are required to work toward manual and automated processes that will ensure timely and appropriate recording of financial information in the general ledger.

According to Appiah (2014), Account Payable Module is a subsidiary ledger keeping track of the transactions with vendor/ suppliers, it involves the processing of invoices received from vendors and preparation of payments voucher for subsequent disbursement of cash for goods

and services provided or purchased. It includes the maintenance of records and preparation of management reports dealing with accounts payables, liabilities and cash requirements necessary to meet them. Purchases Ledger Module is purchases ledger is one used for double entry of goods for stock control recording in cases of any adjustments in stock. This will also relate to the issuance of purchase orders for the procurement of raw materials or merchandise inventory. It may also extend to the procurement of services, (Onaolapo & Odetayo, 2012)

Mahmuda (2010), revealed that, Payroll Module relates to the payment of wages and salaries. They at times include sales commission to employees of the organization, withholding of taxes and also other deductions. The purpose of the payroll system is to ensure automatic salary calculations and maintenance of salary deductions of National Insurance, payee, savings, loan repayments in relation t all employees linked to the payroll an this enhances the salary budgeting function of the institution.

Pérez, Urquía & Muñoz, (2010), noted that, Inventory Control module has multiple functions, including tracking inventory for both costing and tax purposes, controlling purchasing (and the overall level of expenditure) and minimizing the investment in inventory (and subsequent loss of cash flow). The payroll module prepares and prints payroll checks, including all itemized deductions. It is integrated with the general ledger so you automatically set aside the correct amount for FICA and withholding.

A general ledger contains all the accounts for recording transactions relating to a company's assets, liabilities, owners' equity, revenue, and expenses. In modern accounting software or ERP, the general ledger works as a central repository for accounting data transferred from all sub ledgers or modules like accounts payable, accounts receivable, cash management, fixed assets, purchasing and projects. The general ledger is the backbone of any accounting system which holds financial and non-financial data for an organization. The collection of all accounts is known as ledger account. This may be a large book.

Pradhan (2002), asserts the general ledger is the primary component of most financial accounting software applications, including accounts payable software, accounts receivable software and enterprise asset management (EAM) software. The GL can be thought of as an electronic database that provides the data required to build financial reports. The general ledger is at the core of any enterprise resource planning (ERP) financial management system, which encompasses the functions that are required to maintain one or

more sets of books, generate financial reports, manage cash and fixed assets and execute payment and accounts receivable transactions.

After recording of transaction, the data is transferred into Ledger account automatically by the AIS. Manual systems simply make use of hand and equipment operations Trial Balance is prepared by the AIS to check accuracy of the records. With the help of trial balance the AIS can be programmed to prepare Trading, Profit and Loss account and Balance Sheet (Meigs et al, 1988).

Budgetary accountings, also known as responsibility accounting, emphasize controllable costs and expenses as the basis for accounting. Each manager is held responsible for the costs or expenses that fall under the managers' control. Activity plans are developed that specify the expected costs and expenses. It requires every manager to be involved in the preparation of the budget. The system is good because it accumulates costs and expenses from which performance reports are made corrective action (Knott, 2004).

### **Audit Software**

Since AISs were integrated with the accounting process, auditors can also audit in a AISized environment. There are available auditing software packages only for auditors. AIS technologies also provide digital audit trails to be used by the auditor.

According to Cunningham, Nikolni and Bazley, (2000), Organizations typically use several types of processes in their accounting department. Paying bills, collecting customer accounts, posting journal entries and creating account reconciliations are just a few common processes. AIS accounting often allows managers to develop processes that take advantage of the company's information system. Business owners may also be able to reduce the number of processes in their accounting department. Reducing the number of processes can decrease the amount of time it takes to process financial information.

Dandago & Rufai (2014), observed that Business organizations often use AIS accounting information systems to provide support for management decisions. Support usually includes financial analysis from company accountants. Analysis is often taken for the company's accounting information system. Using AIS, this system can process copious amounts of documents electronically for owners and managers. Information systems also allow business

owners and managers to request specific analysis reports within the scope of the company's accounting system.

AIS usually provide organizations with a certain level of flexibility. This flexibility allows business owners and managers to change how their system gathers and distributes financial documents. Changes to business operations usually can create significant changes in a company's financial or accounting processes. Business owners and managers need the most current documents when reviewing their company's overall performance. Automated information systems allow organizations to add new business directorates or departments into their accounting gathering process, (Gregory, 2011).

AIS keeps track of inventory; print payroll checks and receipts; complete deductions; and develop reports for financial agencies, including tax information. This makes end-of-year tax filing and any necessary audits much easier by keeping data easily accessible and organized.

AIS also lessen the need for paperwork, reducing office waste. Many more complex accounting systems can be tailored by software developers to meet individual organizations needs. Systems and decision making the number of which shows the importance of the research in this area, (Sajady et al, 2008).

The decision maker must collect the data needed to execute the decision model, and interpret the outputs of the model and evaluate the merits of each alternative. Finally, the decision maker chooses and executes the preferred solution. The AIS can provide assistance in all phases of decision making, (Ballada & Ballada, 2011).

Wilkinson et al, (2000), Quality information is critical to organizations' success in today's highly competitive environment. Accounting information systems (AIS) as a discipline within information systems require high quality data. Hongjiang (2003), argues that usage of AIS depends on the perception of the quality of information by the users. Generally, the quality of information depends on reliability, form of reporting, timeliness and relevance to the decisions. Effectiveness of accounting information system also depends on the perception of decision-makers on the usefulness of information generated by the system to satisfy informational needs for operation processes, managerial reports, budgeting and control within organization (Sajady et al, 2008).

Nasrin (2010), states that, effectiveness of accounting information systems can be analyzed on three bases: 1) information scope, 2) timeliness, 3) aggregation. Information scope is considered as financial and non-financial information, internal and external information that is useful in prediction of future events. Aggregation of information is considered as means of collecting and summarizing information within a given time period. AIS provides a form of Book keeping for recording transactions. The software ensures that entries are omitted from the ledger by performing the automatic double entry transaction. AIS software has also improved the speed at which the bookkeeping can be performed.

Abu-Musa, (2003), observed that there is also occurrence of intentional entry of wrong data by employees in many business organizations and this has significantly compromised the quality financial information produced by AIS. Unauthorized access to financial data and AIS has become a crucial issue significantly affecting the quality of financial information from such AIS. Both organizational employees and outsiders/hackers have tipped for being involved in this act, which does materially affect the reliability of the financial reports produced.

#### **2.4 Data Presentation and Decision Making**

An accounting system collects and processes financial information about an organization and reports that information to its various stakeholders and decision makers. Financial accounting focuses on communications to the firm's external constituents whereas managerial accounting focuses on statements and analytical tools for management decision making. The four primary types of statements that represent the output of financial accounting are balance sheets, income statements, statements of retained earnings and statements of cash flows, (Dillon & Kruck, (2004)

Stephen & Nelson (2011) stated that, AIS provide speed and accuracy. When using a manual accounting system, each step in the accounting cycle must be performed by hand for example, if a business pays its electricity bill, a check has to be written, an entry must be recorded into the check register, and the transaction has to be posted to the respective ledgers. In this case, a debit to the electricity company's ledger account and credit to cash and this process would need to be repeated for every transaction a business makes.

Lesslie (2012) state that "with AIS accounting, there is ease of producing end of period reports". In AIS, each AIS transaction is automatically posted to both the general journal and the respective ledgers which make producing balance sheets, trial balances, and end of period

financial reports as simple as selecting; contrary to manual system which would require that each general ledger entry would have to be posted to the financial statements by hand.

Hongjiang (2003), observed that Efficiency of AIS is realized when it provides the following instant access to accounting information, because each entered transaction is automatically posted to its respective account. All account information is always up to-date with easy document production where purchase orders, debit memos, sales receipts, sales invoices, inventory lists and others can be printed in moments. This provides that accounting and book keeping department should run more smoothly and be more efficient with AIS software. There will be less time spent on compiling reports. AIS account software eliminates the need to decipher poor or odd hand writing, eliminating much of the possibility of error due to misreading hand written line items, and ability for taxes to be computed automatically. This makes paying quarterly or annual taxes easier since the AIS system will keep running a total of all taxes owed.

## **2.5 The effect of Data Reporting on Decision Making**

Jamie server (2009), stated that, “AIS accounting allows users to input information into accounting software programs. AIS accounting produces information much faster than manual accounting (speed). Accounting software packages, such as quick books and Peachtree come with build-in databases that allow users to input data.

A number of challenges affect accounting systems and these have various effects on the reliability of financial statements. Howcroft (2006), has observed that most of the organizations lack trained staff with experience in accounting. This challenge implies that financial statements under the custody of such people cannot be trusted. It also implies that such people have difficulties in obtaining accounting information.

Most organizations in low developing countries don't have proper record management systems. Their accuracy may not be guaranteed. According to Iselin (2006), there is lack of knowledge about accounting processes and procedures and this may present difficulties in handling accounting systems leading to misleading financial statements. Misleading financial statements can take many forms. The errors or omissions may be relatively minor or they may be significant. The problem, however, is that because of the multiple interests of those who rely on financial statements, even minor errors or omissions can prove disastrous.

Improved Internal and External Reporting Because of the improved speed and accuracy in the processing of information, financial reports can be easily generated and reported to internal and external users. External users can use these reports to assess the condition of the entity. Internal user which is the management benefits from this development for they need to know the details first in making economic decisions. On the impact of AIS technology on accounting, Grande, Estebanez and Colomina (2011,) observed that most organizations have found that AISs greatly simplify the task, enabling managers and other employees to get financial reports exactly when they want them.

Ismail (2007), state that, Flexibility Flexible technology is severely needed in accounting departments. The accounting system must have the capability to adapt with changes in business practices. Information technology associated with accounting creates flexibility to accommodate the changes. Some systems are capable for upgrade when the entity's volume of transaction increases.

Beke (2010), note that, reports are created in a timely manner when using AIS. Reports generated from AIS accounting software allow managers to create reports in a manual accounting system which may lead to more staff frustration and result in having to work without dated information. AIS is designed to automate and integrate all the business operations such as sales, finance, purchase, inventory and manufacturing. With AIS, accurate, up-to date business information is literally at the fingertips and combined with enhanced multi-lingual and data organization capabilities to help the company simplify all the business processes easily and cost effectively.

Bressler and Bressler (2006), state financial reports generated by AIS software help the organization to have a greater visibility into day-to-day business operations and access to vital information. Adaptation of specific business needs is also possible and accurate information. AIS accounting is a highly-integrated application that transforms the business process with its performance, enhancing features which encompasses accounting inventory, reporting and statutory processes. This helps the company access information faster, and takes quicker decisions. AIS accounting also guarantees real time optimization of operations and enhanced communication.

## **2.6 Relationships between Accounting Information Systems and Decision Making**

Amankwah & Debrah (2010), observed that Accounting is one of the languages that communicate economic information to people who have an interest in an organization. Relevant accounting information is that which bears upon or is useful to the action it is designed to facilitate the results it is desired to produce.

Amidu, Effah & Abor (2011), There are many users of accounting information who require information for decision making control activities thus the objective of accounting is to provide sufficient information to meet the needs of various users. What information is relevant depends on the decision making being made, Amidu, Effah & Abor further asserts that decision making is essentially choosing among several courses of action. The available actions are determined by an often time consuming formal or informal search and screening process. Perhaps carried on by a company team that includes engineers, accountants and operating executives.

Osmond 2010), states that, accountants have an important role in decision making process, not as decision makers but as collector and reporters of information that is relevant. Although many managers want the accountant to recommend the proper decision, the final choice always rests with the operating executive. The accountant's role in decision making is primarily that of technical expert on cost analysis. The Ugandan Banker Journal, considered the role of accounting as the most important element of a management information system, and also examines the manner in which accounting information assists management in its various functions. The accounting information system links other information systems like the human resource, research and development and information produced can be expressed in financial terms in planning strategy, and decision making to attain the organizational goals.

According to Salleh et al. (2010), decision making has received attention in recent years, and some authorities have argued that management and decision making are synonymous terms. Amidu et al. (2010), notes that indeed, there is little managerial activity which does not involve decision making in some form. Since the quality of information available is crucial to the quality of decision making an efficient and adequate information system is a pre-requisite of managerial success. The hallmark of efficient decision making may thus be seen in the ability to specify accurately the accounting information needed, and this ability is in itself a function of clear definition of objectives, sound planning and control capability and

satisfactory organisation arrangements. Accounting information is an integrating force, which combines organisational resources into a cohesive whole directed towards the realization of organisational objectives since information affects the fortunes of the organisation in such a fundamental way. It is important that accounting information should be effectively organized and efficiently handled, and this is achieved through management information system. An accounting information system may be linked to the central nervous system of an organization in that it consists of a network of information flows to which each decision may be related.

Bolarinwa (2013), within this information network, decision points may be identified at three levels; - strategic level, Management level and the operational level. He further stipulates that the relationship between the levels of activities and the system is that strategic planning decisions are based upon data derived from both outside and within the system in the form of environmental and analytical information, latter identifies the organization's strength and weaknesses and the former enables it to formulate its strategy.

Alsharayri (2013), describes management accounting as all types of accounting information that are measured, processed and communicated for the internal use of management. The institute of cost and management accounting of England defines Management accounting as the application of professional knowledge and skills in the formulation of policies and in the planning and control of operation of the undertaking management accounting includes both financial and cost accounting. The effectiveness of an information system can be described through a number of different perspectives. Evaluation of an effective systems can be shown through the output produced as required, increased productivity, improve performance, and increased control over the decision related to the information that is produced by the AIS. Thus, the information generated expected can make the decision-making process more effective.

The information delivered is easier to interpret and understand, as well as that the dissemination of information to all functional departments could be improved. According to Amidu et al. (2010), the assessment of the effectiveness of AIS relies on the use of AIS as perceived by the user regarding the quality of the information produced. The quality of information depends on the reliability, report forms, timeliness and relevance for the decision maker. Amankwah & Debrah (2010), defined effectiveness of AIS as a decision, the decision maker perceives about the information output generated by the transaction processing system,

the management reporting, and the whether the budgeting systems meets their needs in the coordination and the control of tasks.

Appiah, (2011), stated that there is a relationship between the use of an integrated system and the effectiveness of AIS. He found that the use of the ERPS has affected the effectiveness of AIS. The effectiveness of AIS can be described through quality of the accounting information output and the firm's internal control. Other studies have been conducted by Beke, (2010) They examine the reasons why companies convert their conventional information system to ERPS, and how the use of ERPS has brought changes, especially in the accounting process. They found that most benefits perceived from adopting ERPS is for the accounting application integration, increasing flexibility in generating information and improving the quality of financial reporting and decisions with respect to timelines and the reliable accounting information produced.

Dandago and Rufai, (2000), examine the ERPS adoption to the relevance of the information and reliability of the information in financial reporting for external users. They found that after the implementation of ERPS, the company will have decreased the reporting lag simultaneously. Whereas Daw and Teru (2015) have shown that the use of ERPS can reduce costs by increasing efficiency through the computerized system, and improved decision making by providing accurate and timely information. Other research on the relationship between ERPS and decision making process has been done by Carton and Adam (2005), Bahrami and Jordan (2009). While Daw and Teru (2015), showed an improvement in the decision-making process both at the strategic and operational levels.

## **2.5 Literature Summary**

Despite the fact that earlier scholars have written about accounting information systems, little is known and a lot is desired about the effect of AIS on financial performance in Uganda, specifically at Ministry of Finance Planning and Economic Development. This therefore, necessitates the researcher to proceed and conduct a study to; establish the effect of data entry on decision making at the MoFPED, examine the influence of data presentation on decision making at the MoFPED and assess the effect of data reporting on decision making at the MoFPED

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

Chapter two reviewed the literature and proposed and discussed key issues related to accounting information systems and decision making. Chapter three explains the methodology that was used during the study. It involves the Research design, study population, sample size and selection, sampling techniques, data collection methods, Data collection instruments, procedure of data collection, Reliability and validity of instruments, Data analysis, measurement of variables, data presentation and analysis and the limitations to the study.

#### **3.1 Research Design**

The researcher adopted a case study design which focused on a single entity. The case study approach was applicable because only staff of MoFPED were selected for the study, in order to place more emphasis on an in-depth contextual analysis of events and their interrelationship, (Yin, 2009). According to Cooper & Schindler (2008), a case study research design bases on a practical, logical and structured manner of the organization relating to the area of study. The case study research design was also useful for testing whether a specific theory and model actually applied to phenomena in the real world, Yin, (2012). The research design involved a comprehensive coverage of the study and enhanced the practicability scenarios in organizations. The design involved intensive study geared towards a thorough understanding of the variables under study, (Cooper & Schindler, 2001). This involved collecting respondent's views, attitudes and opinions about the effects of AIS on decision making at MoFPED. Both qualitative and quantitative approaches were applied. The study used structured questionnaires having both open-ended and closed ended questions to obtain quantitative data. While qualitative data was obtained using interview guide to achieve the desired results. According to Creswell et al. (2003), qualitative research helps in getting an in-depth analysis of the problem under investigation and qualitative research was applied in order to describe current conditions and obtained the relationship between the variables while the qualitative method captured a lot of data in a relatively short time.

#### **3.2 Study Population**

A research population can be defined as the totality of a well-defined collection of individuals or objects that have a common, binding characteristics or traits. The population for this study comprised of all those who were using AIS in the three directorates (Budget, Economic

Affairs and Accountant General's office) at the MoFPED. The main reason for using this category of people was that their activities directly or indirectly had a bearing on usability/applicability of AIS within MoFPED which was the scope for the study. The study was based on a population of 90 employees of MoFPED.

### 3.3 Sampling Size and Design

The sample size of 84 employees was selected from a population of 90 employees using Krejcie and Morgan (1970) sample size determination table after which the researcher proportionately divided the population in each department to determine the optimal sample size for the departments. The results are illustrated in the table below:

**Table 2: Population and sample size**

Category	Population	Sample size	Sampling technique
<b>Directorate of Budget departments:</b> a. Budget Policy and Evaluation b. Infrastructure and Social Services c. Public Administration	30	28	Simple Random sampling
<b>Directorate of Economic Affairs departments:</b> a. Macroeconomic Policy b. Tax Policy c. Economic Development Policy & Research d. Aid Liaison	30	28	Stratified sampling
<b>Accountant General's Office</b> a. Technical and Advisory Services b. Treasury Services c. Financial Management Services d. Inspectorate and Internal Audit e. Uganda Computer Services	30	28	Simple Random sampling
<b>Total</b>	<b>90</b>	<b>84</b>	

**Source:** Human Resource Manual, MoFPED (2016)

### 3.4 Sampling Technique and Procedure

According to Shahrokh, Dougherty & Edward (2014), Stratification is the process of dividing members of the population into homogenous subgroups before sampling. The study used stratified sampling technique where the population of MoFPED was divided into Stratas in accordance to departmental roles played in every department. Stratified sampling was used because the measurements within strata have lower standard deviation, stratification gave a smaller error in estimation and measurements become more manageable and/or cheaper when the population was grouped into strata. The researcher used simple random sampling

sampling to sample proportionately from employees categories shown in table 3.1 above. Simple random sampling provided equal chances of participation of all the staff members in the Ministry. The selection of the sample from the sections was done by purposively selecting the Heads of departments. This is because it was believed that all the target respondents engaged in using AIS at MoFPED and were in a better position to respond to the research questions effectively.

### **3.5 Sources of Data**

The study used primary and secondary data.

#### **3.5.1 Primary Data**

Primary data was obtained from the respondents using survey questionnaires and interview guides consisting of closed ended and open ended questions from MoFPED staff and contractors respectively. Both the questionnaires and interview guide were used to obtain primary data. This involved one-on-one interviews with the respondents by the researcher. They also allowed the researcher to clarify ambiguous answers and obtain in-depth information through probing. Open-ended questions were used which catered for other valuable questions which emerged from the dialogue between interviewer and interviewee. Semi-structured interviews were the most widely used interviewing formats for qualitative research (Amin, 2005). In this study, the probing interviewing tactic was used extensively to obtain a deeper explanation of the issue at hand from the respondents. This was largely due to the fact that the respondents often needed stimuli to expand or clarify their own answers and ideas more broadly, so that a broader understanding at the findings of the study. The primary data for this study was collected using questionnaires and interview guide administered to the respondents by the Researcher and Research Assistants.

#### **3.5.2 Secondary Data**

This consisted of data that was written by other scholars in the field of framework contracts management and procurement performance. This put into account annual reports, performance reports, BMAU and FINMAP midterm review, BMAU Annual reports, Study on Compliance with AIS. The researcher thoroughly reviewed these documents to obtain supplementary data to that provided by the respondents, (Tran et.al, 2013). For this thesis, a research literature review was conducted in order to describe existing knowledge, justify the need for new research, explain research findings and quality of available research, all of which were in line with Fink, (2010). There were several ways of conducting research literature review, derived from authors such as Esterby-Smith, Thorpe and Jackson, (2015),

Savin-Baden & Major, (2013) or Fink, (2010). However, this thesis followed the seven steps by Fink, (2010). These steps were briefly described as follows: selecting a research questions, selecting bibliographic or article database, choosing search terms, Applying practical screening criteria, applying methodological screening criteria, doing the review and synthesizing the results

### **3.6 Data Collection Instruments**

Research instruments or measurement scales simply mean devices for measuring the variables of interest (Bowling, 2002). They were in the form of questionnaire forms comprising single items (questions), batteries of single items or scales of items which were scored

#### **3.6.1 Semi Structured self Administered Questionnaire**

According to Mugenda and Mugenda (2003), questionnaires are valuable tool for collecting a wide range of information from a large number of respondents. Amin (2005), confirm that carefully designed questionnaires easily answer research questions. The researcher ensured that each item in the closed ended questionnaire were fine-tuned to address a specific objective as well as the research question in the entire research process and the responses was, arranged on a five-point Likert scale, where 5 means 'strongly agree', 4 means 'agree', 3 means neutral, 2 means 'disagree', 1 'strongly disagree' with the assertion. This enhanced simplicity where straight forward answers were required. The questionnaires were hand delivered to respondents and collected within an agreed time frame.

The researche made formalized questions for the respondents. They were later collected by the researcher for presentation and analysis. The questions were self administered with objective questions that were addressed to staff in the three directorates of the ministry of finance planning and economic development. The reason for using questionnaires was because it's more convenient for both the researcher and the respondent because it gave room for respondents to analyze the information.

#### **3.6.2 Interview Guide**

Interviews were considered primary data since it allowed the researcher to collect qualitative information for a specific study (Saunder et al., (2012). There are several techniques of conducting interviews and in this thesis semi-structured interviews have been conducted

since that technique favored both an exploratory and explanatory study (Saunders et al., 2012). All interviews conducted were face-to-face interviews.

An interview guide (Appendix: 2) was used to collect qualitative data from the Heads of Departments and the Accounting Officer who were in position to provide in-depth information through probing during the face-to-face interview, (Mugenda & Mugenda, 1999). The researcher presented questions to the respondents and their views were written down. Data obtained during the interview were supplemented with that obtained through the questionnaires. This helped the researcher to obtain first hand information by using the interview guide.

### **3.7 Validity and Reliability of the Instruments**

#### **3.7.1 Validity**

Validity refers to the extent to which research results can be accurately interpreted & Generated to other populations. Research tools were first prepared, and then presented to the supervisors who checked on their correctiveness. The supervisors' comments were used to improve the questionnaire by eliminating errors. Pretesting of questionnaires also was done by administering questionnaires to 10 respondents within the target population but outside the sample this helped to identify the gaps and aided modifications accordingly. The researcher ensured that questions were relevant which enabled meaningful and reliable results represented by variables in the study, (Mugenda and Mugenda, 2005).

The researcher used the formula below to establish validity of the research tool;

$$\text{Content Validity Index (CVI)} = \frac{\text{Agreed items by all judges}}{\text{Total Number of items judged}}$$

$$\text{CVI} = \frac{26}{34}$$

$$\text{CVI} = \mathbf{0.765}$$

The overall CVI of the questionnaire was accepted when the CVI 0.765 was found to be over and above the average of 0.70 for the instrument to be accepted as advanced by Amin, (2005).

#### **3.7.2 Reliability**

Reliability is the measure of the degree to which a research instrument yields consistent results after repeat. Cronbach's Alpha coefficient was used to measure reliability of the instrument. According to Amin (2005) an alpha of 0.7 or higher is sufficient to show reliability the closer it is to 1 the higher the internal consistency in reliability, (Sekaran, 2003). The questionnaires were pretested using respondents within MOFPED and reliability

was computed using statistical Package for Social Scientists (SPSS) and scores were evaluated.

**Table 3: Illustrating Reliability Statistics**

Variable	Cronbach's Alpha coefficient
Accounting Information System	0.72
Decision Making	0.78

The Cronbach's Alpha and the Content Validity Index were above 0.7; therefore, the research instruments to be used were considered both valid, reliable and therefore were used to collect data on the study variables used to address the research questions. To ensure reliability of quantitative data, the Cronbach's Alpha Reliability Coefficient for Likert-Type Scales test was performed. In statistics, Cronbach's alpha is a coefficient of reliability. It is commonly used as a measure of the internal consistency or reliability of a psychometric test score for a sample of examinees. According to Sekaran (2003) some professionals as a rule of thumb, require a reliability of 0.70 or higher (obtained on a substantial sample) before they use an instrument. Upon performing the test, the results were above 0.7 therefore considered reliable.

### **3.8 Data Presentation and Analysis**

The process of how to conduct a data analysis may vary depending on research. Nevertheless, the aim of the data analysis is to interpret data and draw meaning from it (Saunders et al., 2012). In order to answer the research questions presented in this thesis as well as formulate conclusions, a data analysis was a necessity. In this thesis, two types of data were analyzed separately and simultaneously. According to Merriam, (2009) and (Saunders et al., 2012). This procedure is a way of acquiring more reliable data.

#### **3.8.1 Quantitative Data Analysis**

Data collected from the field was processed, coded and entered in a Statistical Package for Social Sciences (SPSS), where frequency tables were extracted for analysis. Pearson correlation coefficient and regression analysis were used to determine the extent to which AIS affected decision making. Inferential statistics was used to answer the research questions. Tables, Trend Line, Graphs and charts with relevant percentages, means and standard deviation provided a quick snap shot at the current situation of the institution by presenting the cost reduction (savings), quality improvements and level of competitive advantage attained. Therefore, this dissertation addressed research quality in line with Savin-Baden and major, (2013), 24 who argues that quality research can be ensured by

acknowledge credibility, transferability, dependability and conformability. Lastly, ethics within this thesis was addressed

### **3.8.2 Qualitative Data Analysis**

Data was categorized under different themes and sub-themes using critical judgmental approach. This kind of data was interpreted by explanations and substantiated using open responses from the field (Mugenda and Mugenda, 2003). While analyzing qualitative data, conclusions were made under different themes and inter-related to ascertain the relationship between AIS and decision making at the MoFPED.

### **3.9 Ethical Considerations**

The author considered it essential to discuss ethical requirements within the research, since ethical concerns emerged as early as the time when choosing research topic, formulating the research design and at accessing the data needed to finalize the research (Saunders et al., 2012). Saunders et al., (2012) define ethics as: “to the standards of behavior that guide study conduct in relation to the right of those who become the subject of a work, or affected by it”. For this study, the ethical considerations were divided and accounted for in two primary parts. The first part, concerned ethical considerations addressing the organization involving all business processes, personnel and documentations within the organization. The second part concerned all respondents who participated in this thesis. The ethical considerations were initiated as early as January 2016, when applying for a master thesis employment at MoFPED. Before, granted access two requirements set by the case study had to be fulfilled. Since MoFPED manages classified documents and information on different classifications levels as well as procurement businesses on regular basis, cautiousness was required from the author at all times. All respondents were informed that they had to be anonymous if they preferred and that participation was voluntary. MoFPED agreed on giving the author permission to use the institutional specific information. However, a few respondents requested not to be referred to as name and therefore they were referred to as their working title. In order to overcome ethical issues, the author considered the code of ethics, along with the principles that followed such obligations as discussed in Sunders et al., (2012). Confidentiality and anonymity were adhered to and any data provided was entirely for academic purposes only. Lastly, the author had no previous experience or connection to MoFPED or the respondents within this research.

### **3.10 Limitations of the Study**

Like any other research, the study was not without limitations and these are:

The research covered primarily public entities. However, the analysis and findings were related to other public institutions across the country. Selecting and contacting only in MoFPED may not be a true representation of the views of all entities in Uganda.

Yet the choice of sampling technique, purposive sampling, makes generalization of the findings problematic although it is said that there is no one best sampling strategy because which is best will depend on the context in which you are working and the nature of your research objective(s).

The research used close-ended questionnaire for data collection and this has a weakness of limiting the amount of data collected. There is likelihood that relevant data may not have been captured because of the use of close-ended questionnaire.

## CHAPTER FOUR

### DATA PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS

#### 4.0 Introduction

This chapter focused on data presentation, analysis and interpretation of the study from both primary and secondary data in bid to answer the research objectives in chapter one. For each research question, data was descriptively, qualitatively and quantitatively presented; finally, interpretation and results analysed as follow;

#### 4.1 Response Rate

Questionnaires were administered to 72 respondents and 65 respondents returned the questionnaires. 12 heads of departments were interviewed. This translates to an overall response rate of 91.6%. The high response rate was attributed to the fact that most of the questions were semi-structured making it easy for the respondents to fill in the questionnaires. Furthermore, the questionnaires were delivered and collected by hand and hence there was a close contact and follow-up with the respondents. The high response rate is an indication that the results of this study are reliable. According to Mugenda & Mugenda (2003), a response rate above 70% is good enough for the study results to be valid.

## 4.2 Demographic Characteristics of the Respondents

In order to find out about the demographic data of the respondents questions A-E were asked from the questionnaire and the following responses were revealed.

**Table 4: The Demographic data about the Respondents**

n =65			
Bio-data	Options	Frequency(f)	Percentage (%)
a) Gender	Male	41	63.1
	Female	24	36.9
b) Age Bracket (years)	20-29 years	09	13.8
	30 -39 years	18	27.7
	40-49years	27	41.5
	50yrs and above	14	21.5
c) Education Level	Certificate and below	05	7.7
	Diploma	14	21.5
	Degree	35	53.8
	Postgraduate and masters	16	24.6
d) Designation	Top management	07	10.8
	Middle level employee	14	21.5
	Lower level employee	44	67.7
e) Length of Service	1 -3year	10	15.4
	4-6years	22	33.8
	7years and above	33	50.8
f) How often MoFPED provides AIS in data	Annually	10	15.4
	Semi- Annually	12	18.5
	Quarterly	25	38.5
	Monthly	18	27.7

**Source:** Primary data

According to the findings in table 4 above, the majority of the respondents 41(63.1%) were male employees while 24 (36.9%) were female counterparts. This reveals that there is uneven distribution of workers at MoFPED. Although the male respondents are more than the female, both made use of AIS and hence obtaining information from both sex helped to gather more objective data.

The findings on respondents' age, 13.8% of respondents were aged between 20-29years, 27.8% were in the age bracket of 30-39 years, 41.5% were of the bracket 40-49years while those above 50years were 21.5%. This implies that majority of respondents were adults who

understood clearly the interrelationship between the use of AIS and decision making at the ministry. These provided more reliable information due to virtue of their maturity.

Regarding respondent's levels of education, the findings reveal that 7.7% of the respondents had attained Certificate qualifications, 21.5% had completed diploma education, 53.8% were university graduates with degrees while 24.6% were postgraduate and master's holders. This implies that the majority of staff at the ministry were degree holders and above. This means that their level of being elite helped to discharge their duties with professionalism and due competency in understanding and interpreting accurately the AIS information generated.

As reflected in table 4.1 above, 67.7 of the respondents were employees of the lower level management, 21.5% belonged to Middle level employees whereas 10.8% were members of the top management. This means that information was obtained from all the strategic levels of management with a pool of skilled personnel to ensure accurate, quality and reliable data that enhances decision making is generated.

Furthermore Table 4 results reveal that 15.4% of the respondents had spent 1-3years working at MoFPED, those who had been in MoFPED for 3-6years constituted 33.8% of the total respondents, and those that had worked with MoFPED for a period of 7 years and more comprised 50.8%. From these findings, it was observed the majority of the respondents have been serving for a period of 7 years and more. This implies that majority of the respondents had spent a considerable period of time working at MoFPED and had also had considerable time using AIS to create impact on decisions made at the ministry.

In regard to how often MoFPED provided AIS data, 15.4% of the respondents revealed that it was annually, 18.5% stated that the ministry does it on Semi- Annually basis, 38.5% observed the MoFPED conducted supplier development on Quarterly basis while 27.7% revealed that it was done on Monthly basis. The implication of the above finding is that MoFPED conducted AIS as often as possible and on regular basis as the demand and need arose from time to time as a continuous process of enhancing efficient decision making would require

### 4.3 The Effect of Data Entry on Decision Making at the MoFPED

The first objective of this study was to examine the effect of data entry on decision making at the MoFPED. Respondents provided data in regard to the extent to which they strongly disagree (1), disagree (2), not sure (3), agree (4), strongly agree (5). Data was analyzed using SPSS version 21 where findings were presented in both descriptive and inferential analysis format. Descriptive analysis was presented using mean and standard deviation while inferential analysis utilized linear regression analysis to establish the effect of data entry on decision making at the MoFPED;

**Table 5: The Effect of Data Entry on Decision Making at the MoFPED**

	Data entry and decision making	N	Minimum	Maximum	Mean	Std. Deviation
1	Clerical clerk enters data by preparing, organizing and checking documents for accuracy, deleting unnecessary files, transcribing information into an electronic format	65	1	5	4.33	0.29
2	Data on all operations are captured and availed in time	65	1	5	4.60	0.47
3	Data entry verifies completeness and promptly updates the system	65	1	5	4.06	1.34
4	Data capturing allows omission of data which adversely affects decision making	65	1	5	4.9	0.75
5	Database administrators Maintain up-to-date database on AIS in archives to support Planning	65	1	5	4.71	0.63
6	Data entered in the General Ledger is readily available and quickly retrievable	65	1	5	4.75	0.51
7	Data is protected against unauthorized access	65	1	5	4.38	0.35
8	Data in the General ledger are applicable and helpful for the task at hand	65	1	5	4.19	0.46

*Source: Primary Data (2016)*

Table 5 Results revealed that Clerical clerk at the ministry enter data by preparing, organizing and checking documents for accuracy, deleting unnecessary files, transcribing information into an electronic format (Mean=4.33, SD= .29). The implication of the above finding is that, AIS modules referred to as stand-alone module, consisting of several modules such as QickBooks and Peachtree were used to capture data relevant for decision making.

***Interview with the Directorate of Budget Departments at the MoFPED revealed that;***

*“A simple accounting package contained one module or also Database Systems which reduces inefficiencies and information redundancies. They added that, this system captures both financial and non-financial data, and then it stores that information in the data warehouse.*

***Interview with the Directorate of Economic Affairs Departments had this to say;***

*The commonly used Software Tools in the Accounting Process at the ministry are; accounting software, audit software, word processing software, graphics software electronic data interchange and system are Enterprise Resource Planning (ERP) systems, Oracle and SAP. They aid accounting transactions within functional modules such as accounts payable, accounts receivable, payroll, and trial balance.*

*The Ministry of Finance Planning and Economic Development uses Electronic Data Interchange (EDI) for inter-governmental exchange (done with other Ministries, Agencies Authorities and Local Governments).*

#### **4.3.1 How often is data captured presented at the MoFPED and stakeholders**

Figure 1 shows the general model for Accounting Information System. It is considered as a general model because it is applicable to all AIS at the Ministry. The elements include end users, data sources, data collection, data processing, database management, information generation and feedback.

Respondents also agreed that MoFPED Data on all operations are captured and availed in time (Mean=4.6, SD=.47). The results imply that Reliable accounting information was recorded in its completeness, correctness, just and confirmable.

*During interviews with the Head Treasury Department in the MoFPED, he revealed that, the first operational stage in AIS is the data collection. Its objective is to ensure that the data entering are valid, complete and free from material error. This stage promotes relevance and efficiency. The system must only capture relevant data and collects them only once. After the data has been collected it will then be stored in the database management and will be processed into information.*

Results also showed that MoFPED Data entered in the General Ledger is readily available and quickly retrievable (Mean=4.75, SD=.51). This implies that internal and external financial information used to meet the different needs in form of finance information or reports, their different requirements for accounting information were easily accessible.

*Secondary data from the Financial Management Act, (2016) stipulates that in section 24 of Accounting records that, “An Accounting Officer of a vote whose money is appropriated for classified expenditure shall cause to be maintained by the vote— (a) a cashbook; (b) a general ledger and subsidiary ledgers; (c) a vote control register; (d) an assets register; (e) a*

stores record; (f) vouchers and their supporting documents; and (g) any other record that the Accountant General may, from time to time determine,

Section 26 stipulates that Accounting and book keeping. (1) An Accounting Officer shall keep and maintain proper books of accounts in which the Accounting Officer shall cause to be entered the actual receipts and expenditures of the vote in a financial year. (2) The Accountant General may determine the other records that an Accounting office may enter in the books of accounts. (3) The appropriation shall form the basis of the accounts for the financial year to which they relate and the analysis and classification of the accounts of revenue and expenditure shall accord with the appropriation. (4) An entry in the books of accounts shall be supported by a voucher and other approved documents containing the particulars of the item to which it relates. (5) The receipts and expenditures or a record determined by the Accountant General in sub regulation (2) may be stored electronically and where they are stored or recorded electronically, the receipts and expenditure or the record shall be capable of being produced in printed form, where required.

Respondents further agreed that, Database administrators Maintain up-to-date database on AIS in archives to support Planning (Mean= 4.71, SD=.63). The implication of this finding is that, Accountants at the ministry believed that human related factors had much more influence on accounting information quality and IT people built in many controls into systems, at the end of the day it still relied on people to enforce those rules and controls.

Findings in table 5 also showed that, Data is protected against unauthorized access (Mean= 4.19, SD = 0.46). This means that, an adapted version of the system that was meant to manage and control public expenditure allocated to various entities of the public sector. Tasks of revenue and expenditure management thus, MoFPED contracted IT and finance experts to modify and adapt AIS to meet the information requirements of public finance

The table 5 further reveals that MoFPED Data in the General ledger are applicable and helpful for the task at hand (Mean= 4.5, SD=.43). This implies that technocrats maintained QuickBooks applications which they believed provided better information for decision-making purposes.

#### **During Interviews with the Directorate of the Accountant General's Office at the MoFPED:**

*The Implementation of the Integrated Financial Management System (AIS) was motivated by the Ugandan Government's desire to improve efficiency in budget preparation, execution and financial reporting. Since 2003, the AIS has been extended across all 22 ministries and 25 central government agencies. The AIS has also been implemented in 8 local Governments with plans to extend it to 6 more districts as part of the first tier1 AIS implementation.*

Respondents further agreed that MoFPED provides Data entry verifies completeness and promptly updates the system (Mean=4.06, SD=1.34). The results imply that three directorates of the Ministry were able to compare their accounting information during the time and to compare financial status and operation outcomes of other institutes with those of themselves.

**Table 6: Key AIS Modules**

<b>AIS Modules</b>	<b>Role</b>
Public Sector Budgeting	Enables vote holders to prepare and submit budgets electronically. Consolidation is also done on the system
General Ledger	This enables electronic and automated posting of transactions on the system
Payables	Receiving and processing supplier invoices are linked electronically and validated in real time
Purchasing	Links purchase orders to the online cash limits thus enhancing commitment controls
Cash Management	Enables cash forecasting and bank reconciliation to be done online in real time. An interface with BoU is also in place to facilitate automated reconciliation
Revenue/Receipting	Links Treasury with the Uganda Revenue Authority (URA) in respect of tax returns. Invoicing and collections of non-tax revenue is also expected to be managed online.

**Source:** Primary data

*Interviews held on 4<sup>th</sup> of October 2016 with the head of Technical and Advisory Services in Accountant General's Office revealed that;*

*“AIS has not been able to provide the desired support to elements of budget planning that are analytical in nature, notably forecasting of revenues and expenditures over the medium term. Also, annual estimates could not be easily constrained by the budget ceilings of the Medium-Term Expenditure Framework (MTEF), and the budget estimates were printed from legacy systems. The AIS has also been inadequate to fully adjust to recent Output Oriented Budgeting (OOB) reforms. To address this, the Ministry of Finance has introduced a supplemental tool - the Output Based Budgeting tool (OBT) - to provide support in preparing, monitoring and reporting on the result based budget. The annual budget estimates are uploaded from the OBT onto the integrated AIS, and expenditure data is uploaded into the OBT on a quarterly basis to enable budget reporting”.*

The study also found out that, Data capturing allows omission of data which adversely affects decision making (Mean= 4.0, SD= 0.70). The results imply that quality data in AIS was ruined which affected; accurate, timely, complete, and data consistent.

#### 4.4 The influence of Data Presentation on Decision making at the MoFPED

The second objective of this study was to establish the influence of data presentation on decision making at the MoFPED. Respondents provided data in regard to the extent to which they strongly disagree (1), disagree (2), Not sure (3), agree (4), strongly agree (5). Data was analyzed using SPSS version 21 where findings were presented in both descriptive and inferential analysis format. Descriptive analysis was presented using mean and standard deviation while inferential analysis utilized linear regression analysis to establish The influence of data presentation on decision making at the MoFPED as shown below;

**Table 7: Data Presentation and Decision Making at the MoFPED**

	<b>Data Presentation And Decision Making at the MOFPED</b>	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
1	AIS presentation enhances full disclosure at MOFPED	65	1	5	4.62	0.37
2	Information presented is material and influence the decisions that users make on the basis of an entity's reports	65	1	5	4.83	1.62
3	AIS data presentation allows understanding of the AIS contained in financial statements.	65	1	5	.51	0.41
4	Presentation of relevant AIS helps users confirm or correct prior expectations and confirmatory values	65	1	5	4.74	0.63
5	data presentation helps users predict AIS ability to take advantage of opportunities and to react to adverse situations.	65	1	5	4.63	0.51
6	faithful representation of financial statements is complete, neutral, and free of material error	65	1	5	4.94	0.31
7	AIS allow Financial information presentations capability to make a difference when it has predictive value, confirmatory value, or both	65	1	5	4.92	0.78
8	Data presentation allows proper allocation of most scarce resources	65	1	5	4.50	0.46
9	financial reporting helps users who lack the ability to demand all the financial information they need from an entity	65	1	5	4.0	1.45

*Source: Own computation based on survey data*

Table 7 indicates that, results on the data presentation and decision making at the MoFPED.

The interpretation of the results is based on the mean and the S.D.

Table 7 Results revealed that AIS presentation enhances full disclosure at MoFPED (Mean= 4.62, SD=0.37). The implication of the above finding is that,

***During interviews with the Principal Secretary to the treasury, it was revealed that,***

*Each directorate was responsible only for its own directorate's system, and the Minister and Treasury provided directorates with instructions, such as what directorates needed to do, and the things that needed to be reconciled. However, it seemed that the control of this type of system was difficult. As one of the Minister of Finance Planning and Economic Development stated: But we have to basically rely on them to do it, whereas if it were more centralised, it would be a smaller group of people, and we would be able to have more control. Policies and standards. The role of policies and standards could perform in improving information quality was examined.*

Respondents also agreed that Information presented is material and influence the decisions that users make on the basis of an entity's reports (Mean=3.83, SD=1.62). This means that, staff trust their information at the end of the day otherwise one can spend a lot of time worrying about it.

Respondents further agreed that AIS data presentation allows understanding of the AIS contained in financial statements (Mean=4.51, SD=0.41). This means that scope the AIS modules and functionality strengthen payroll desired level of resources requirements.

The study also found out that, Presentation of relevant AIS helps users confirm or correct prior expectations and confirmatory values (Mean= 4.74, SD=0.63). This means that the ministry obtains relevant information that help users to make predictions about the outcomes of past, present, and future events, or to confirm or correct prior expectations.

Respondents also agreed that, data presentation helps users predict AIS ability to take advantage of opportunities and to react to adverse situations (Mean=4.63, SD=0.51). The implication of the above finding is that, timing was the major influence of information and reports, sometimes the deadline might suffer inaccuracy of information.

The study also found out that, faithful representation of financial statements is complete, neutral, and free of material error (Mean=4.94, SD=0.31). The implication of the above finding is that, the Ministry planned well in advance for the post implementation of AIS to ensure proper support structure and technical staff are put in place and properly assigned to manage funds.

Respondents also agreed that, allow Financial information presentations capability to make a difference when it has predictive value, confirmatory value, or both (Mean=4.92, SD=0.78). The implication of the above finding is that AIS did not only facilitate to ensure that the

expenditure is provided for in the budget and amount remaining is adequate to support the expenditure.

Notwithstanding, the processes of modifications and adaptation of AIS to ministry's task were still a big challenge with regard to the provision of the necessary information for decision-making purposes in the MoFPED. For instance, one interviewee noted that: "The system controls budget allocations and not actual financial resources received. here are wide discrepancies between the budget and actual financial resources received due to high uncertainties of public resources.

However, even EFTS were manipulated by fraudsters in the MoFPED, hefty sums of money whisked from the coffers of the national government in payment of fake company.

Furthermore, the change management with regard to the implementation of AIS in the Ministry routines seemed not to have seriously addressed the human factor. This was evidenced by the failure for some of the MoFPED officials to change their mindsets to embrace AIS. For instance, it was alleged that some of the MoFPED officials, especially the senior technocrats, had negative attitude towards the enactment of AIS in their routines. The permanent secretary MoFPED observed, during the AIS meeting at Serena Hotel-Kampala that: "*AIS was seen as a "finance thing". Most senior staff in ministry had very little or no time at all for AIS.*" (Field work, 2016).

It was also observed that some of the senior staff of the MoFPED had limited or inadequate IT skills to utilise AIS in their normal routines. Besides, they were reluctant to undergo training on how to use AIS. The principle secretary argued that because most senior technocrats were not comfortable with AIS they ceded their responsibilities to their subordinates. For instance, he posited that:

*"Passwords are passed on to technocrats who do not have designated rights and responsibilities to execute. This is not lawful and can be misused by subordinate staff into perpetrating undesired acts leading to financial loss."*

On the other hand, unlike the changes in accounting practices in the public sector, the adoption of AIS initially lacked an enabling and enforceable legal framework till 2016 when the Electronic Act and Financial and Accounting Regulations Acts were enacted by parliament. However, the introduction of AIS had no legal framework. Rather, AIS was considered as a "good practice", but not easily enforceable.

Thus, from the above evidence, the manual and legacy systems still prevail in MoFPED, despite the implementation of AIS. The actual decisions are usually taken based on manual or legacy systems, which are always up to date. However, data captured and presented in the AIS is not real time. Besides, some staffs, especially senior administrative technocrats

absolved themselves from the use of AIS in decision-making and authorization of transactions. Instead, AIS was viewed as a system for the Finance department only.

#### 4.5 The effect of Data Reporting on Decision Making at the MoFPED

The third objective of this study was to establish the effect of data reporting on decision making at the MoFPED. Respondents provided data in regard to the extent to which they strongly disagree (1), disagree (2), not sure (3), agree (4), strongly agree (5). Data was analyzed using SPSS version 21 where findings were presented in both descriptive and inferential analysis format. Descriptive analysis was presented using mean and standard deviation while inferential analysis utilized linear regression analysis to establish the effect of data reporting on decision making at the MoFPED as shown below;

**Table 8: The Effect of Data Reporting on Decision Making at the MoFPED**

	<b>data reporting &amp; decision making</b>	N	Minimum	Maximum	Mean	Std. Deviation
1	Financial reports are usually issued on a quarterly and annual basis to account to citizens for the use of resources	65	1	5	4.47	0.61
2	financial reports are publicly posted on the website	65	1	5	4.44	0.26
3	AIS data Reporting enhances Development Fund, how it is earned and the cost of earning it	65	1	5	4.49	0.44
4	Time allowed for half year, quarterly and end of year reports is adequate	65	1	5	4.62	0.24
5	Adherence to applicable regulation is enhanced through reporting	65	1	5	4.68	0.68
6	Financial reporting helps the ministry to engage in effective decision-making concerning the strategic objectives and overall strategies of the Consolidated Revenue Fund(CRF)	65	1	5	4.54	0.46
7	The data disclosed in the reports help management discern the strengths and weaknesses on overall Statements of Revenue	65	1	5	4.34	1.49
8	Financial reporting provides vital information about the Statement of Recurrent Expenditure and activities of the ministry to its stakeholders	65	1	5	4.37	0.39
9	Reporting in a balance sheet is a snapshot of what the ministry owns and how it financed, through borrowing or owners' investments.	65	1	5	4.05	0.34

*Source: Own computation based on survey data*

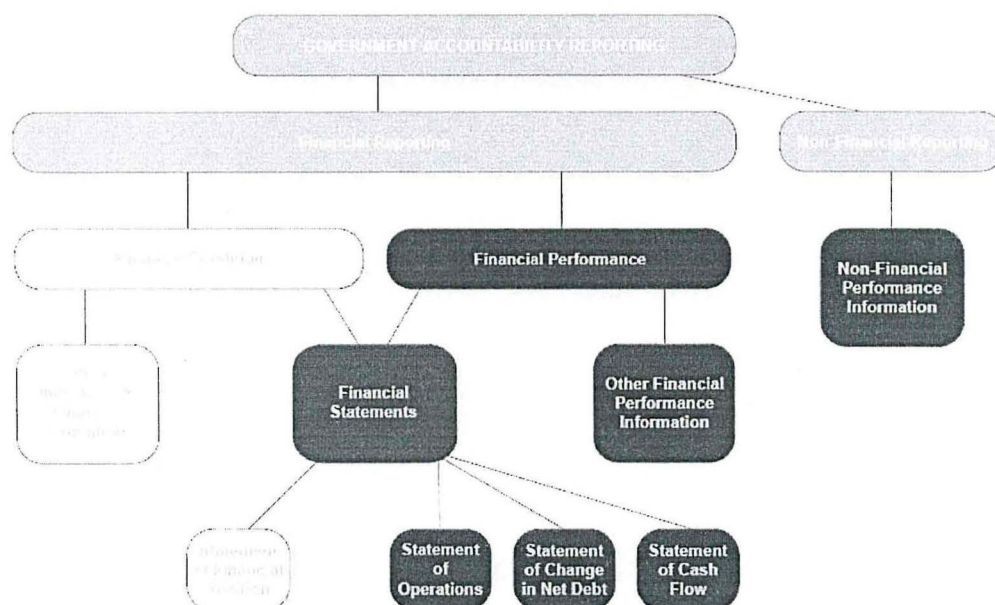
Table 8, explores the effect of data reporting on decision making at the MoFPED.

Results showed that financial reports are publicly posted on the website (Mean=4.47, SD=0.61). The findings mean that the reporting of financial information either within the financial statements (i.e. recognition policy) or in the notes to the financial statements (i.e. disclosure policy) often posted online were ministerial policy statements, performance of economic reports, sustainable development reports, medium term debt management report, Financial Management and Accountability Programme (Finmap III) and quarterly macro-economic reports, Budget speech among others.

Respondents also agreed that Financial reports are usually issued on a quarterly and annual basis to account to citizens for the use of resources (Mean=4.44, SD=0.26). The implication of the above finding is that, users of financial statements access these reports and judge what would otherwise be identical financial situations as being different due to the different accounting policies and methods adopted

Table 8 shows that respondents further agreed that AIS data Reporting enhances Development Fund, how it is earned and the cost of earning it (Mean=4.49, SD=0.44). The results imply that Decision-makers are motivated to optimize their decision-making performance and the efficacy of the decision-making process is often dependent on the nature and content of the information provided

**During interviews with the Deputy Secretary to the Treasury held on 13<sup>th</sup> October 2016:**  
*He said that financial reporting helped to improve Internal and External Reporting and he argues that because of the improved speed and accuracy in the processing of information, financial reports can be easily generated and reported to internal and external users. External users can use these reports to assess the condition of the entity. Internal user which is the management benefits from this development for they need to know the details first in making economic decisions for instance LGs get more discretion in use of Central Government transfer, Non-Tax Revenue Management (NTR), effective Payroll Management; Audit and Oversight, Results Oriented Management (ROM) as well as Budget reforms by use of vote functions and Review accountability legislation*



*Source: Ministry of Finance, Planning & Economic Development (2016), FINMAP III Linkage to the PFM Reform Strategy*

**Figure 3: Illustration of MoFPED Reporting**

MoFPED prepares many types of reports to provide accountability to taxpayers. Those reports use both financial and non-financial information. Financial reporting involves reporting on a government’s financial condition and its financial performance. Non-financial performance reporting reports the outcomes of government actions and programs. Examples of such outcomes might be the health or literacy level of the population or the condition of the environment or the crime rate in a jurisdiction.

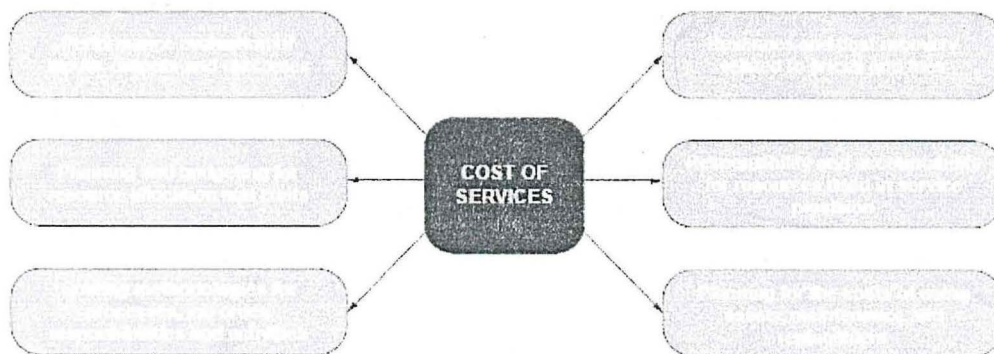
**The Head of Department Public Administration in the Directorate of Budget said that:** *Financial reporting is essentially a process of communication of financial information. Financial reporting is a key source of the information stakeholders who need to make informed choices about how to use their government’s limited resources to best serve the interests of taxpayers. It also provides accountability about government finances and how governments have used the resources taxpayers have entrusted to them.*

The head of Macroeconomic Policy in the **Directorate of Economic Affairs argued that:** *A financial reporting model is important because it provides a framework within which governments can assess their transactions and results and account for and report them on a consistent basis — from year to year and from jurisdiction to jurisdiction. A reporting model describes the basic information needed for fair presentation of government finances. The criteria accountants use to determine whether financial statements are fairly presented are known as generally accepted accounting principles (GAAP).*

According to the Deputy treasury in charge of Economic Development Policy & Research in the Directorate of the Directorate of Economic Affairs-MoFPED:

*The term “financial reporting model” is used to describe the set of rules, parameters and content requirements that prescribe what must be presented in financial statements. He added that the Public-Sector Accounting Board. The objectives of PSAB are: to issue recommendations and guidance that enhance the usefulness of public sector financial statement information; To issue recommendations that enhance the usefulness of public sector financial and non-financial performance information; to engage interest and debate by improving stakeholders’ understanding of public finances; to effectively coordinate activities with other accounting standard-setters and other public sector related organizations and to provide PSAB’s program of standard-setting and communications effectively, efficiently and economically.*

The reporting and auditing of high-level cost information also adds credibility to the more detailed costs that underlie the reported numbers. Although the benefits of costs of services information are not realized to any great extent at the financial statement level, real benefits do arise at the program level. The following illustrates the need for cost of services information for planning, budgeting and cost management. Reporting costs assists management in: understanding costs; choosing among various service delivery options; assisting in cost reduction initiatives; establishing charges and fees; serving as a basis for transfer payments and subsidies; establishing budgets and analysing variances; benchmarking activities and assessing performance; improving accountability for allocation and use of resources.



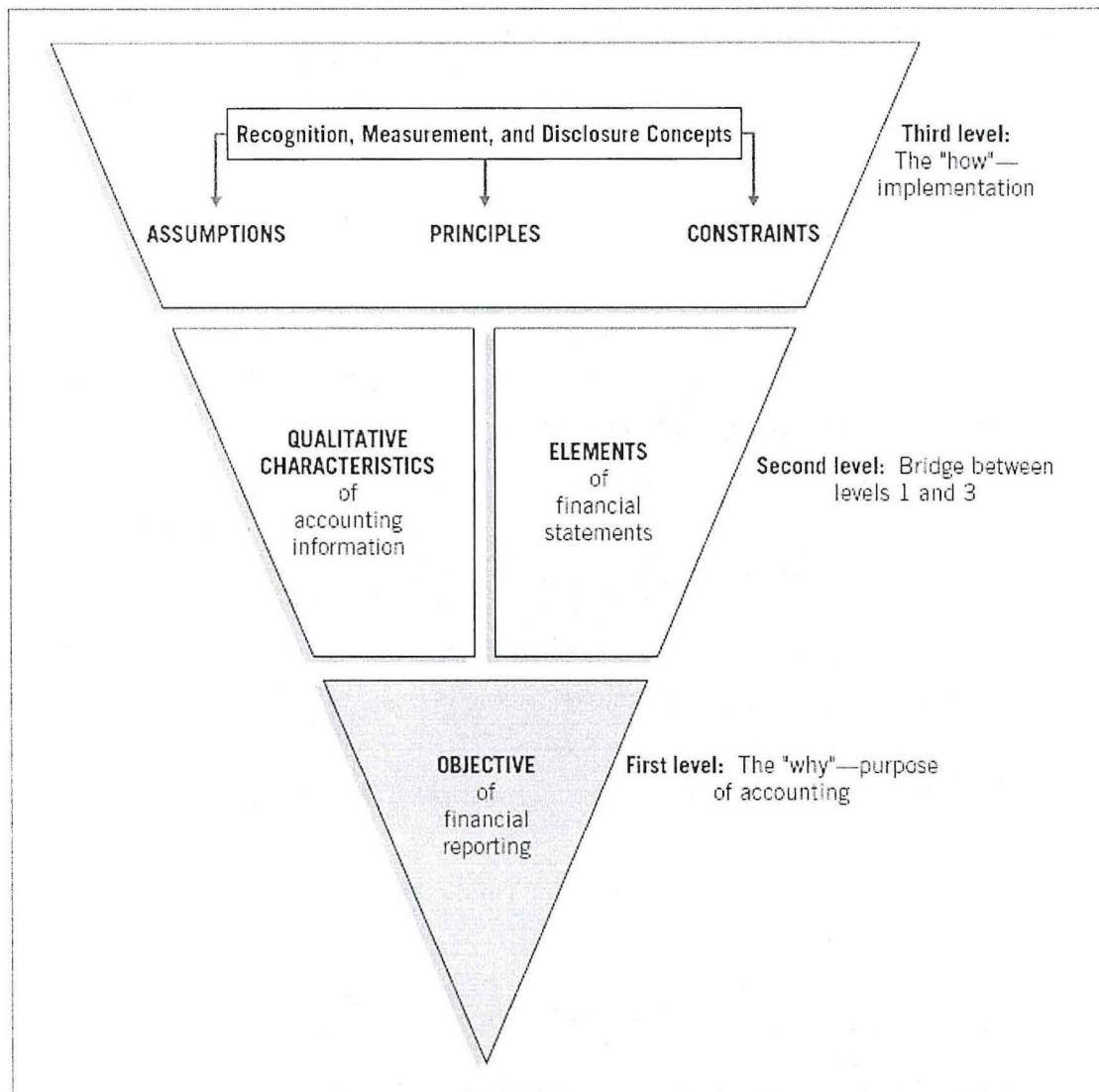
*Source: Ministry of Finance, Planning & Economic Development (2016), FINMAP III Linkage to the PFM Reform Strategy*

**Figure 4: Illustrating Accountability for allocation and use of resources**

Table 8 results also found out that, quarterly and end of year reports is adequate (Mean=4.62, S.D=0.24). This implies that it is generally acknowledged that decision-makers have limited

ability when it comes to the processing of large quantities of data. The way in which information is presented (i.e. presentation format) has been proposed as a possible solution enabling a more efficient and effective decision-making process.

### Framework for Financial Reporting

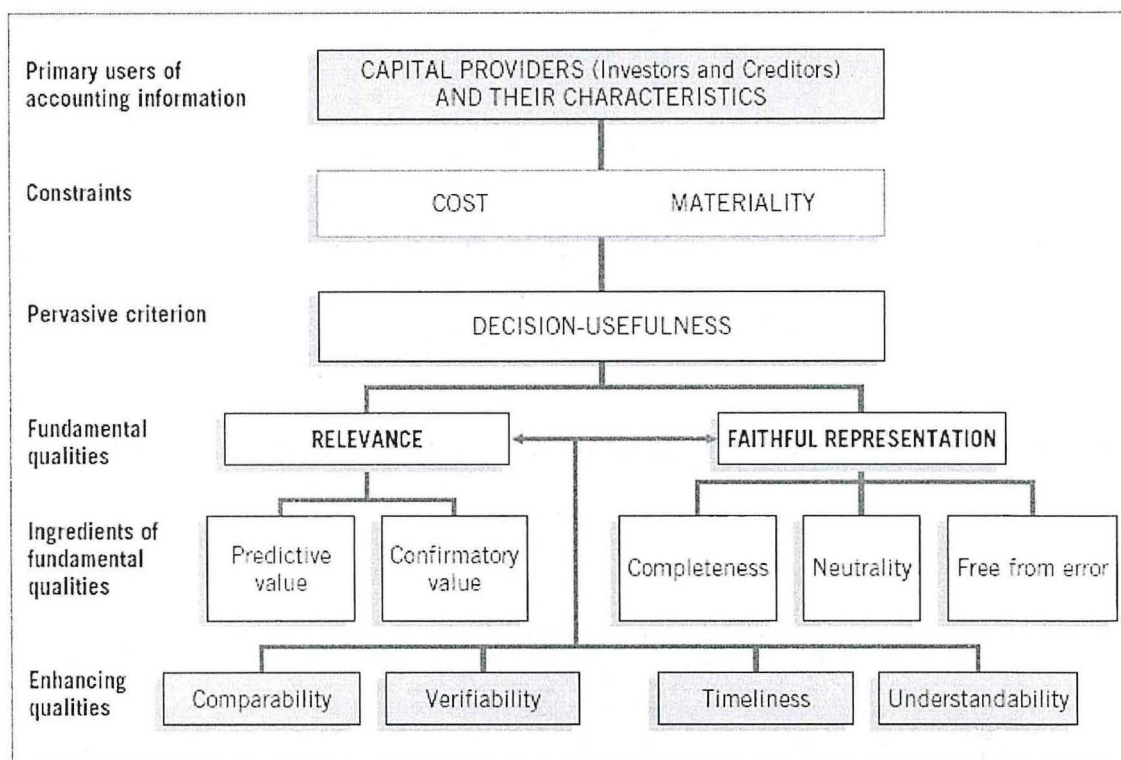


Adopted from Framework for the Preparation and Presentation of Financial Statements” (London, U.K.: IASB, 2001).

**Figure 5: Framework for Financial Reporting**

As indicated by Illustration 2-2, qualitative characteristics are either fundamental or enhancing characteristics, depending on how they affect the decision-usefulness of information. Regardless of classification, each qualitative characteristic contributes to the decision-usefulness of financial reporting information. However, providing useful financial

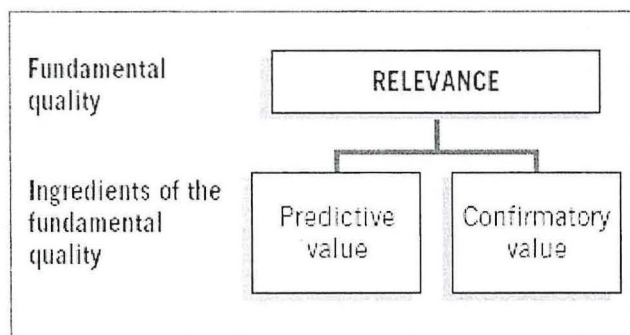
information is limited by two pervasive constraints on financial reporting cost and materiality.



*Source: Ministry of Finance, Planning & Economic Development (2016), FINMAP III Linkage to the PFM Reform Strategy*

**Figure 6: Hierarchy of Accounting AIS Qualities**  
**Fundamental Quality—Relevance**

Relevance is one of the two fundamental qualities that make accounting information useful for decision-making. Relevance and related ingredients of this fundamental quality are shown below.



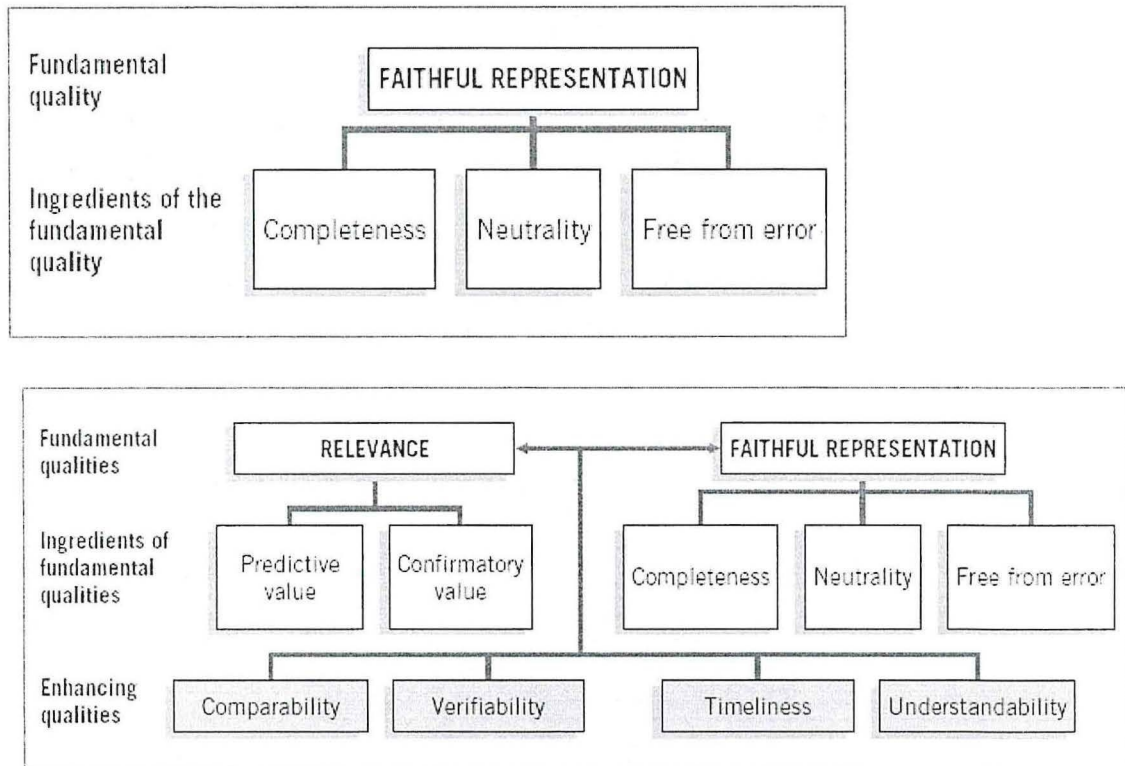
*Source: Ministry of Finance, Planning & Economic Development (2016), FINMAP III Linkage to the PFM Reform Strategy*

**Figure 7: Fundamental AIS Quality**

To be **relevant**, accounting information must be capable of making a difference in a decision. Information with no bearing on a decision is irrelevant. Financial information is capable of making a difference when it has predictive value, confirmatory value, or both. Financial information has **predictive value** if it has value as an input to predictive processes used by investors to form their own expectations about the future.

**Fundamental Quality—Faithful Representation**

Faithful representation is the second fundamental quality that makes accounting information useful for decision-making. Faithful representation and related ingredients of this fundamental quality are shown below;



*Source: Ministry of Finance, Planning & Economic Development (2016), FINMAP III Linkage to the PFM Reform Strategy*

**Figure 8: Enhancing AIS Qualities**

Enhancing qualitative characteristics are complementary to the fundamental qualitative characteristics. These characteristics distinguish more-useful information from less-useful information. Enhancing characteristics, shown below, are comparability, verifiability, timeliness, and understandability.

**Framework for Financial Reporting**

Framework for the Preparation and Presentation of Financial Statements” (London, U.K.: IASB, 2001), paras. 83–88.

Table 4 reveals that respondents also agreed that, Adherence to applicable regulation is enhanced through reporting (Mean=4.68, SD=0.68). The results imply the new reporting technology provides opportunity for accounting report preparers to extend their reporting medium beyond the traditional hard-copy print-based format to include alternative forms of digital reporting which has seen presentation formats evolve from the tabular and graphical to more sophisticated formats such as Portable Document Format (PDF), Hypertext Mark-up Language (HTML) and Extensible Business Reporting Language (XBRL). Such alternative forms of presentation are also seen to promote greater transparency in financial reporting.

**Interview with the director Technical and Advisory Services at the Ministry of finance planning and economic development revealed that:** *One of the key issues in financial reporting and standard-setting is whether accounting report users are able to adjust for differences in accounting methods and policies including whether an economic event is recognized within the financial statements or disclosed by way of note to the financial statements. The context of the reporting within the financial statements (i.e. recognition policy) or as a note to the accounts (i.e. disclosure policy).*

Section 25. of the Public Financial Management Act, (2016) on Annual financial statements and audit reports provides that, The Accounting Officer of a vote whose money is appropriated for classified expenditure shall prepare and submit to the Minister, the Accountant General and the Auditor General, in the format prescribed by the Accountant General, the annual financial statements for the classified expenditure.

Results showed that Financial reporting helps the Ministry to engage in effective decision-making (Mean=4.54, SD= 0.46). The implication of the above finding is that, strategic objectives and overall strategies of the Consolidated Revenue Fund (CRF) can be realized.

The study also found out that the data disclosed in the reports help management discern the strengths and weaknesses on overall Statements of Revenue (CRF) (Mean=4.34, SD=1.46). This meant that it helps management to engage in effective decision-making concerning the Ministry's objectives and overall strategy.

The study also found out that Financial reporting provides vital information about the Statement of Recurrent Expenditure and activities of the ministry to its stakeholders ((Mean=4.37, SD=0.39). This means that the accounting standard on investment property (IAS 40) allows a change in value to be accounted for in one of two ways: either the

investment property is revalued and the asset reported in the balance sheet at its market value and the resultant gain or loss recognized in the income statement (i.e. Fair value model), or the investment property remains reported in the balance sheet at cost and a disclosure of change in fair value provided in the notes to the financial statements (i.e. Cost model). Using three different forms of digital reporting technologies (i.e. PDF, HTML and XBRL)

On contrary, the AIS Accountant of the MoFPED objected that AIS could not produce the financial statements, instead he argued that the accountants were not yet used to the new systems. For instance, the AIS Accountant in the MoFPED argued that: *“The process of generating the reports is different from what the accountants are used to in the former systems”*.

AIS was intended to generate and disseminate information across sectors and departments of the government system. However, this motive was constrained by lack of adequate computing equipment and internet connectivity. In many cases, AIS was operated only in finance department that had computers. Other departments did not have computers designated for AIS.

In some cases, the administrative staff at the MoFPED failed to post the transactions completely to the system. This could partly account for the backlogs in posting or reconciling of transactions dating as far back as 3 years. Although one of the major intentions of adoption and implementing AIS in the MoFPED was to institute control mechanisms against frauds, some of the officials managed to manipulate AIS to perpetrate their selfish interests.

In order to control against manipulation of AIS for selfish interests, the government of Uganda on 2<sup>nd</sup> July 2007 introduced the electronic funds transfer system (EFTS), to all government departments, including local governments, like Kampala that were using AIS. Under the EFTS, all expenditures of the MoFPED exceeding 20 million shillings, were supposed to be effected electronically through the MoFPED for verification and processing before remitting electronic instructions to Bank of Uganda (central bank) for effecting the payment to the payee’s commercial bank. After crediting the payee’s account, the payee would then acknowledge the payment by issuing a receipt to payer.

*Interviews with the head of inspectorate and Internal Audit Department-MoFPED Revealed that, it was very difficult to produce reports that itemized revenue remittances from each directorate. This prompted officials in MoFPED to maintain manual records and legacy systems, such as QuickBooks, Ledger Works and Spreadsheets, alongside AIS. This prompted officials in to maintain manual records and legacy systems, such as QuickBooks, Ledger Works and Spreadsheets, alongside AIS.*

Furthermore, in the final report of the annual assessment of minimum conditions and performance measures for MoFPED revealed that MoFPED had failed to meet the deadline for the submission of the final accounts to national government. The Finance department of MoFPED had resorted to the original software, *Ledger Works*, for the production of the draft final accounts. For instance, one Budget Officer said: *“QuickBooks provide better information for our routine operations, than AIS. For instance, up to now the asset module on AIS is not yet activated. Therefore, we cannot prepare final accounts using AIS. We have to resort to legacy systems in order to prepare final accounts.”*

However, regression analysis was used to analyse this hypothesis. The result and conclusion reached were shown below:

**Table 9:** Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.968 <sup>a</sup>	.938	.927	1601.30239

a. Predictors: (Constant), Accounting Information System

**Source:** *Field Survey, 2016*

Table 9 shows the result from the analysis that relationship exists between the independent variable and the dependent variable. The model was significant by establishing a relationship between accounting information system and effective decision making. The coefficient of determination (adjusted  $R^2$ ) is 0.927, which indicate that 92.7% variations in Effective decision making were explained by the independent variable which is data reporting. AIS influenced decisions making to a level of 92.7%, meaning that effective and efficient use of AIS enabled realization of quality and timely decisions made. Whereas the 7.3% being explained by other factors like errors in information captured, one’s ability to use the information to make decisions and many others.

Table 9 shows the result from the analysis that relationship exists between the independent variable and the dependent variable. The model was significant by establishing a relationship between accounting information system and effective decision making. The coefficient of determination ( $R^2$ ) is 0.938, which indicate that 93.8 percent of the variations in Effective decision making were explained by the independent variable which is Accounting information system. Therefore, it is

concluded that for Hypothesis I that, there is a significant relationship between effective AIS data reporting and decision making.

**Table 10: Regression coefficient for Data reporting and decision making**

Model	Unstandardized		Standardized Coefficients		
	B	Std.	Beta		
1. (Constant)	-2523.684	1278.7		-1.974	.096
Accounting information system	.321	.003	.968	9.503	.000

a. Dependent Variable: decision making

*Source: Field Survey, (2016)*

From the table 10 above, the constant gave a value of -2523.684 which is the intercept. This means that when accounting systems are not applied, the decisions made shall be detrimental to realization of organizational goals and objectives. Hence establishing a negative relationship because of the negative value while the row contains the name of the Independent Variable (Accounting information system) which refers to the slope. Any value below -2 and above +2 will be accounted for as less improvement in the procedure and techniques. The value for the independent variable is statistically significant, this also explain the establishment of a relationship between the independent variable and the dependent variable. The independent variable (accounting Information system) had a significant value of .000 which is lower than the decision rule value of 0.05. And this explains for the strong relationship that existed among the variables. Therefore, it is concluded that there is significant relationship between accounting information system and decision making.

This relationship will be shown in the model below:  $Y = -2523.684 + .032x$

Where Y= Effective decision making and

X= AIS data reporting

#### **4.7 Decision Making at the Ministry of Finance Planning and Economic Development**

In bid to realize the results of dependent variable which was to explain “**Decision Making at the Ministry of Finance Planning and Economic Development**” respondents indicated the extent to which they strongly disagree (1), disagree (2), Not sure (3), agree (4), strongly agree (5). The interpretation of the results is based on the mean and the Standard Deviation as presenet below:

**Table 11: Showing Descriptive views on Decision Making at the Ministry of Finance Planning and Economic Development**

	<b>Decision Making at the Ministry of Finance Planning and Economic Development</b>	N	Minimum	Maximum	Mean	Std. Deviation
1	The MoFPED undertakes decisions on payroll management in the public sector	65	1	5	4.58	1.64
2	The MoFPED decides on the public-sector reforms that influence accountability	65	1	5	4.33	1.70
3	The MoFPED decides on the public-sector reforms that influence accountability	65	1	5	4.19	1.63
4	MoFPED uses AIS to address decentralized payroll management in the public sector	65	1	5	4.59	1.50
5	MoFPED undertakes decisions on supervision of privatization and parastatal reform program	65	1	5	4.73	1.35
6	Commitment Control System (CCS) to minimize excessive expenditure	65	1	5	4.46	1.36
7	Fiscal Decentralization Strategy using Electronic Funds Transfer (EFT)	65	1	5	4.71	0.24
8	Directorates at the ministry make strategic decisions based on AIS	65	1	5	4.43	0.46
9	Decisions on overall performance effectiveness are undertaken using AIS	65	1	5	4.52	1.20

*Source: Own computation based on survey data*

The MoFPED undertakes decisions on payroll management in the public sector (Mean=4.85, SD=1.64). The results imply that it is an IT-based budgeting and accounting system that will assist GOU entities to initiate, spend and monitor their budgets, initiate and process their payments, and manage and report on their financial activities. The IFMS can streamline all fiscal and financial management processes throughout Government and provide GOU with a modern budgeting and accounting system with state of the art functionality on which to undertake its national and public sector accounting and financial management. The IFMS will interface with other systems such as the Integrated Personnel and Payroll system (IPPS), URA Revenue systems and Bank of Uganda systems.

Table 11 Results revealed that The MoFPED decides on the public-sector reforms that influence accountability (Mean=4.33, SD=1.7). This implies that, they become more variable when given more information and increase their confidence in the accuracy of their judgements when they should not.

Respondents also agreed that The MoFPED decides on the public-sector reforms that influence accountability (Mean=4.19, SD=1.63). The above findings imply that, implementing an Integrated Financial Management System (IFMS) that will eventually cover all the major Government business processes including Budgeting, Accounting and Reporting, Purchasing, Payments / Payables, Revenue management, Commitment Accounting, Cash Management, Debt Management, Fixed Assets and Fleet Management, and Inventory/Stock Control.

Respondents further agreed that MoFPED uses AIS to address decentralized payroll management in the public sector (Mean=4.59, SD=1.5). This implies that The Government of Uganda adopted a decentralized salary payment processing system with effect from Financial Year 2014/15 with the main objectives of this policy shift are to; I) Ensure salaries are paid on time, II) Weed out invalid records on the payroll including “ghost” employees, and III) Promote ownership, transparency and accountability of the payroll by the respective Institutional Payroll Managers. This reform is being implemented in accordance with Section 45(1) (ac), and 11 (2) (c and d) of the Public Finance Management Act (PFMA 2015). This is in conformity with section 4 (1) (c) of the repealed Public Finance and Accountability Act (PFAA), 2003 as per section 85 of the PFMA (2015).

The Government of Uganda adopted a decentralized salary payment processing system with effect from Financial Year 2014/15. The main objectives of this policy shift are to; I) Ensure salaries are paid on time, II) Weed out invalid records on the payroll including “ghost” employees, and III) Promote ownership, transparency and accountability of the payroll by the respective Institutional Payroll Managers. This reform is being implemented in accordance with Section 45(1) (ac), and 11 (2) (c and d) of the Public Finance Management Act (PFMA 2015). This is in conformity with section 4 (1) (c) of the repealed Public Finance and Accountability Act (PFAA), 2003 as per section 85 of the PFMA (2015). Budget Monitoring and Accountability Unit (BMAU-2015)-Ministry of Finance, Planning and Economic Development

Results in table 11 indicated that MoFPED undertakes decisions on supervision of privatization and parastatal reform program (Mean=4.73, SD=1.35). This means that, the ministry is responsible for decision making in regard to promotion of investment, (b) supervision of Uganda Investment Authority, (c) responsible for private sector issues (d)

responsible for the Capital Markets Authority (e) responsible for supervision of privatization and the parastatal reform program

Table 11 results show that respondents also agreed that, Commitment Control System (CCS) to minimize excessive expenditure (Mean=4.46, SD=1.36). This means that the inefficient commitment control system was more prominent than off system commitments.

Results in table 11 showed that Fiscal Decentralization Strategy using Electronic Funds Transfer (EFT) (Mean=4.59, SD=1.5). This means that EFT is a Straight through Processing of Salaries (STP). where Banks take long to effect payments even when the payer has approved a payment; payments missing from the system but cannot be traced since payees have no mechanism of acknowledging receipt; and the return in aggregate formats of bounced payments making it difficult to disaggregate accounts. However, it was also reported that in Electronic Payments Systems the principal of irrevocability applies (If a payment is not unapplied within 48 hours it is deemed to be paid). In addition, Bank statements are available on a daily basis through the interface with Bank of Uganda and Commercial banks.

The study also found out that Directorates at the ministry make strategic decisions based on AIS (Mean=4.73, SD=1.35). This implies that accounting issue of whether to recognize key financial information within the financial statements (recognition policy) or disclosure the same information in the notes to the financial statements (disclosure policy).

Table 11 results revealed that Decisions on overall performance effectiveness are undertaken using AIS (Mean=4.46, SD=1.36). This implies that appropriate digital presentation formats minimize functional fixation whereby financial information becomes more transparent irrespective of its placement. They reasoned that if presenting information in a particular style (i.e. digital presentation formats) enhances data structure, this would allow users to become more effective and efficient in information acquisition and usage forms of digital presentation formats – PDF, HTML and XBRL

**Interview results with one of the state Minister of microfinance had this to say;**

*Decision-making is a cognitive process that leads to the selection of a course of action. In its basic form, the decision-making process involves three sequential stages: input, processing, and output. The input stage is concerned with the source and form of the information made available to decision makers. The information processing stage is seen to encompass the primary tasks of decision-making; that is, acquiring information, evaluating the relevance of different items of information, and weighting the importance of specific items for the decision*

*task at hand. The output stage is concerned with the decision. Use of XBRL made information presented outside of the financial statements more transparent and consequently, the participants who used XBRL achieved a more optimal investment decision outcome compared to participants who used, for example, PDF.*

## CHAPTER FIVE

### DISCUSSION, SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.0 Introduction

This chapter presents the discussions of the results, summary, conclusions and recommendations of the findings in chapter four in relation to the questions/objectives of the study and literature review basing on supplier development initiative, and its implications on operations efficiency of MoFPED.

#### 5.1 Discussion of the major Findings

##### 5.1.1 The effect of data entry on decision making at the MoFPED

The study also established that the decision to adopt and implement the AIS was a directive from the Accountant General in the Ministry of Finance, Planning and Economic Development (MoFPED). This followed the recommendation in 2002 from Ernst and Young public accountants and consultants to adopt and implement AIS in order to improve financial management in the public sector, (MoFPED, 2007).

Results in table 4.1 revealed that the MoFPED used Accounting information system as a technique of capital budget and controlling and comparing capital costs (accomplished with physical advance in the project) to manage implementation of decisions and provides the manager with data required for modifying actions. Further still Data was captured in AIS using different formats that included; PDF, HTML and XBRL on their ability to process information where PDF allows no information processing, HTML allows static information processing and XBRL allows dynamic information processing. Accounting information system is a component (or element) of the company which provides users with financial data and decision-making base information through processing financial circumstances. The finding is similar to Nikoo, Maram & Mahmoodi, (2012) who earlier established that this system can be considered as the logical intersection of two wider issues, accounting and management information system. What is common in both fields is a pivotal interest in information. Accounting is more tended toward information itself whereas MIS mostly considers covering systems which produce information.

The study also found out that data entry on decision making at the MoFPED consisted of many functions such as: Collecting and storing the activities and operations data efficiently

and effectively, Classifying and summarizing the data, generating useful information for decision-making and providing adequate supervision. Results also portrayed that an Accounting Officer of a vote whose money is appropriated for classified expenditure shall cause to be maintained by the vote 08 as: (a) a cashbook; (b) a general ledger and subsidiary ledgers; (c) a vote control register; (d) an asset register; (e) a stores record; (f) vouchers and their supporting documents; and (g) any other record that the Accountant General may, from time to time determine.

This is in agreement with Qasim (2004). In addition, Aldlahma (2008), explained the elements of accounting information systems; he stated that the accounting information system has seven elements; Entity (Economic Unity), Documents, Books and records :(journal and ledger), Using double-entry method, Control systems, which aim to protect the assets and property of the entity, Qualified human resources and Machines and Equipment. The result is also synonymous to Haddad, Atma (2009) who defined the elements of accounting information systems as follows; People who operate the system, and perform various functions, the procedures and instructions, Data, Software, The infrastructure of information technology, which includes computers, and networks and Internal control and security that protect the data in the information system.

AIS was basically used to processes or gathers and studies “raw data” and converts them into suitable information in the process of decision making. The basic characteristics of the accounting are: gathering, processing and presenting accounting (financial) information, information considering company’s business and those directed towards different interested users. Accounting process contains several phases. Basically, it is a process in which input data converts into output information. If we focus our attention on the most significant part of the accounting (bookkeeping), then we can present the data processing through several phases as it is shown in Figure 13.

The first data processing phase consists of collecting data about occurred business events. After data collecting comes the second phase of the accounting process that consists of business event analysis. After that recording in journal and general ledger comes. At the end of accounting period, just before preparing basic financial statements, we need to check data accuracy in the books since we make financial statements on the basis of those data. Therefore, we prepare the trial balance. It represents the recapitulation of all ledger accounts and financial transactions. After all records are coordinated and after we find all data accurate. we have the last phase of the accounting process that refers to preparing financial

statements. As it has already been pointed out, financial statements have to satisfy interests of different accounting (financial) information users. *Innovative Marketing, Volume 2, Issue 3, 2006*.

Accounting process that is shown refers, first of all, to financial accounting whose final products are financial statements. However, from the user's aspects and from the aspects of the scope of business we distinguish the following types of accounting: financial accounting, cost accounting and managerial accounting. We usually say that cost and managerial accounting ensure different information for internal users and financial accounting ensures synthetically and quality information needed for preparing the financial statements for external users. Nevertheless, in the context of measuring the entire business quality, financial accounting is also directed towards internal users.

Data capturing was affected by the efficiency and effectiveness of accounting information systems such as qualified human resources, software and hardware and data bases (Ramly, 2011). Thus, the accounting information systems combined from these three factors, if any system has to be effective it should include a combination of well qualified human resources, the best software, and hardware and data bases the finding is in agreement with Hafnawi (2001), stated that the accounting information system has to possess the following characteristics to be effective and efficient: Accurate, Timely, Provide administration by necessary information to achieve control and evaluation of the economic activities, Provide administration by necessary information that helps them in planning, Provide administration by feedback, Flexible to suit the environmental changes

The AIS comprises three major subsystems: (1) the transaction processing system (TPS), which supports daily business operations with numerous documents and messages for users throughout the organizations; (2) the general ledger/financial reporting system (GL/FRS), which produces the traditional financial statement, such as the income statement, balance sheet, statement of cash flow, tax returns, and other reports required by law; and (3) the management reporting systems (MRS), which provides internal management with special-purpose financial reports and information (e.g., budgets, variance reports, and responsibility reports) needed for decision-making (Hall, 2008).

There are normally two ways to build an information system in an enterprise: (1) develop customized systems from scratch using in-house systems development activities, or (2) purchase pre-programmed commercial systems from software vendors.

Secondary data obtained from section 29 of the Financial Management Act, 2016: about payments indicated that vouchers were produced using AIS. The section further provides that: (1) All payments of public moneys shall be vouched on payment vouchers, electronic or otherwise, prescribed by the Accountant General.

(2) An Accounting Officer may designate in writing, a public officer to sign payment vouchers on his or her behalf, and prescribe the financial limits and other conditions within which the authority may be exercised.

(7) All payments due on vouchers shall be made as soon as possible to the persons entitled to receive them.

### **Missing vouchers**

(1) Where a voucher against which payment is made is lost, misplaced or inadvertently destroyed, the Accounting Officer of the vote that makes the payment shall notify the Secretary to the Treasury.

(2) Where after due enquiry, the Secretary to the Treasury is satisfied as to the circumstances of the loss, mislaying or destruction of the voucher and that payment was properly and correctly made, the Secretary to the Treasury may recommend to the Minister to authorise the payment to stand charged in the accounts.

(3) Where the Secretary to the Treasury is not satisfied as to the circumstances of the loss, mislaying or destruction of the voucher, he or she shall recommend to the Minister the appropriate remedy to be taken. (4) For the purposes of this regulation, a payment voucher which is incomplete due to the unavailability of the necessary supporting documents, shall be regarded as a missing voucher

### **Accounting and book keeping.**

(1) An Accounting Officer shall keep and maintain proper books of accounts in which the Accounting Officer shall cause to be entered the actual receipts and expenditures of the vote in a financial year. (2) The Accountant General may determine the other records that an Accounting office may enter in the books of accounts. (3) The appropriation shall form the basis of the accounts for the financial year to which they relate and the analysis and classification of the accounts of revenue and expenditure shall accord with the appropriation.

(4) An entry in the books of accounts shall be supported by a voucher and other approved documents containing the particulars of the item to which it relates.

(5) The receipts and expenditures or a record determined by the Accountant General in sub regulation (2) may be stored electronically and where they are stored or recorded

electronically, the receipts and expenditure or the record shall be capable of being produced in printed form, where required.

The recording of all financial transactions in a systematic and logical manner, Transactions include sales, purchase income, and payments by an individual or organization. Book keeping is usually performed by a book keeper using common methods of bookkeeping such as single entry and double entry systems. While these systems may be seen as “real” book keeping, any process that involves recording of financial transactions is a bookkeeping process. It generally includes a daily summary of cash receipts and a monthly record of receipts and disbursements (worksheets). A cheque book, for example, is a single-entry bookkeeping system where one entry is made for each deposit or cheque written. Receipts are entered as a deposit and a source of revenue. Cheques and withdrawals are entered as expenses. If a manual system is used, in order to determine your revenues and expenses you have to prepare worksheets to summarize your income and categorize and summarize your different types of expenses (Diamond and Khemani 2005).

The double entry system is the standard system used by businesses and other organizations to record book keeping transactions. Since all business transactions consist of an exchange of one thing for another, double entry bookkeeping using debits and credits, is used to show this two-fold effect. Debits and credits are the device that provides the ability to record the entries twice. The double entry system also has built-in checks and balances. Due to the use of debits and credits, the double-entry system is self-balancing. The total of the debit values recorded must equal the total of the credit values recorded, (Ghasemi and Shafeiepour,2011).

At the Ministry of Finance Planning and Economic Development, an accounting system records, retains and reproduces financial information relating to financial transaction flows and financial position. Financial transaction flows encompass primarily inflows on account of incomes and outflows on account of expenses. Elements of financial position, including property, money received, or money spent, are assigned to one of the primary groups i.e. assets, liabilities, and equity, (Ministry of Finance, Planning & Economic Development, 2015)

### **5.1.2 The influence of Data Presentation on Decision Making at the MoFPED**

#### **Electronic filing and issuing of documents.**

Basing on Table 7 Results AIS presentation enhances full disclosure at MoFPED. AIS data was present in form of two management in different electronic formats, word documents, Ms.

Excel formats. Generally, the quality of information depends on the reliability, form of reporting, timeliness and relevance to the decisions. Accounting information systems (AIS) as a discipline within information systems require high quality data. However, empirical evidence suggests that data quality is problematic in AIS. Therefore, knowledge of critical factors that are important in ensuring data quality in accounting information systems is desirable. Muhindo, Mzuza, & Zhou, (2014).) argues that usage of AIS depends on the perception of the quality of information by the users. Generally, the quality of information depends on reliability, form of reporting, timeliness and relevance to the decisions. AIS data financial presentation encompassed following the regulations of the Electronic Transaction Act (2011) and Financial Management Act of (2016) requirements. These were signed, electronically before they are presented for public on website and newspapers.

The result is also supported by Dillon & Kruck, (2004) who revealed that, an accounting system collects and processes financial information about an organization and reports that information to its various stakeholders presented for decision makers. The AIS presentation were in four primary types of statements that represent the output of financial accounting are balance sheets, income statements, statements of retained earnings and statements of cash flows.

This is similar to Stephen & Nelson (2011) who revealed that AIS provide speed and accuracy. When using a manual accounting system, each step in the accounting cycle must be performed by hand for example, if a business pays its electricity bill, a check has to be written, an entry must be recorded into the check register, and the transaction has to be posted to the respective ledgers. In this case, a debit to the electricity company's ledger account and credit to cash and this process would need to be repeated for every transaction a business makes.

### **5.1.3 The effect of Data Reporting on Decision making at the MoFPED**

Chapter four results in table 6 indicated that for financial reporting to be effective, among other requirements, it should be relevant, complete and reliable. Accounting information should give a decision maker the capacity to predict future actions. It should also increase the users to identify similarities and differences in two types of information.

At the MoFPED financial reports were provided in electronic form. The study revealed that Performance of electronic transaction was regulated as below; (1) where a person makes an order for goods or services by electronic means, unless otherwise agreed by the parties, the supplier shall execute the order within thirty days. (2) Where the supplier fails to execute the

order within thirty days or within the agreed period, the consumer may cancel the order after giving written notice of seven days. (3) Where the supplier is not able to supply the goods or services, on the ground that the goods or services ordered are not available, he or she shall notify the consumer before the expiry of the agreed time and refund any payment made in respect of the goods or services within thirty days.

On the other hand, cancellation of transaction after receipt of goods or services was regulated as follows; (1) Subject to sub section (2), a consumer may cancel an electronic transaction and any related credit agreement for the supply of goods or services (a) within seven days after the date of receipt of the goods or services; or (b) within seven days after the date of conclusion of the agreement. (2) A consumer who returns goods after cancelling an electronic transaction under subsection (1) shall not be charged for the returning of the goods other than the direct cost of returning the goods (3) Where payment for the goods or services has been effected before a consumer exercises the right to cancel the transaction under subsection (1), the consumer is entitled to a full refund of money paid within thirty days of the date of the cancellation.

(4) This section shall not be construed as prejudicing the rights of a consumer which are provided for in any other law. This is in agreement with the Uganda Electronic Transactions Act Law No.8 2011 Supplement no. 4 18th march, 2011, acts supplement to The Uganda Gazette No. 19 *Volume CIV dated 18th March, 2011*. Printed by UPPC, Entebbe, by Order of the Government.

## **5.2 Summary of the major findings**

### **5.2.1 The effect of data entry on decision making at the MoFPED**

The aim of the study was to find out the effect of data entry on decision making at the MoFPED. Data was captured using accounting information systems is one that enters, stores, manipulates, and presents data about an organization's value-adding activities to aid decision makers in planning, monitoring, includes financial accounting systems, which have the primary purpose of generating financial statements in accordance with Generally Accepted Accounting Principles. The electronic funds transfer (EFT) system which has greatly improved disbursement of funds to the end users was also agreed among member states of the EAC. The PFM strategy also recognizes that regional integration may deter some reforms from taking place such as the reform of approving the budget before the beginning of the Financial Year. Information systems are those the function of which is to store data, process them in framework of institution's information objectives and provide information required for economic decisions. These systems are designed and established in organizations by

managers, analysts and system designers having sufficient knowledge on computer technology.

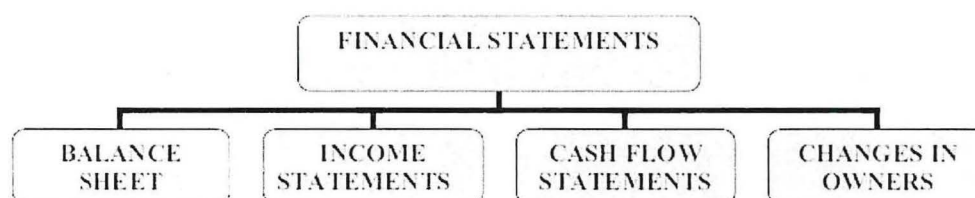
### 5.2.2 The influence of Data Presentation on Decision Making at the MoFPED

The most significant financial statements that the MoFPED takes into account when examining the entire public service delivery to decision for the future entailed: balance sheet, income statement or profit and loss account, cash flow statement and changes in owner's equity, performance reports medium term plans and expenditures and budgets. AIS were deemed to be universal information technologies with the intended consequences of enhancing financial management at the MoFPED. AIS were intended for managing expenditure in the national government in order to meet their information requirements in respect of revenue remittances from the directorates.

In many cases, the MoFPED officials had to resort to legacy systems to capture most of the transactions and in some instances, they would forget to transfer the information to the AIS. The sustainability of the AIS was constrained by the lack of adequate technical skills and knowledge of the information systems, especially by the senior technocrats and external audit staff. Although there was capacity building programmes were provided to “reskill” the MoFPED officials to use AIS in their routines, it was revealed that the training was mainly intended to create general awareness of the new information system, and thus was not adequate, especially with the much older senior technocrats who had lower levels of IT skills.

### 5.2.3 The effect of Data Reporting on Decision Making at the MoFPED

The findings from this case study revealed that the main objective of financial reporting is to provide financial information about the MoFPED that is useful to present and potential equity investors. The AIS information of the ministry reported included; balance sheet, income statement or profit and loss account, cash flow statement and changes in owner's equity as illustrated below;



**Figure 9: Data Reporting formats**

The balance sheet is the fundamental financial statement that represents ministry's financial position. Basic elements of balance sheet are assets, liabilities and owners' equity. While

balance sheet represents the financial position in a particular moment, income statement (or profit and loss account) represents Ministry's performance for a particular time period.

Managerial reporting, budgeting, and control of the organization enhanced decision making by managers, internal control and financial reporting quality, and facilitation of the transaction processing companies in bid to realize NDP Objectives of the Accountability Sector which are: Enhance the principle of value for money in management of public funds to ensure efficient use of Government resources for better service delivery, Promote public demand for accountability, Foster compliance with accountability policies, service delivery standards and regulations for better governance, Promote research and usage of sector information to improve public awareness and Enhance the contribution of the Accountability Sector to economic growth and development.

The Ministry was able to achieve the Key Elements in the NDP on Accountability Sector that are in PFM Strategy; Commitment Control System (CCS) to minimize excessive expenditure, Improve effectiveness and coverage of AIS, Fiscal Decentralization Strategy (FDS) LGs to get more discretion in use of CG transfers, Non Tax Revenue Management (NTR), Electronic Funds Transfer (EFT): Continue implementing, Effective Payroll Management; Audit and Oversight, Results Oriented Management (ROM), Budget reforms by use of vote functions and Review accountability legislation.

### **5.3 Conclusions**

From the summary of findings, the study concluded that: -

In a general conclusion, it can be said that accounting system is essentially designed as a key component of an organization's whole system. In other words, accounting system is a part of the management information system which is itself a main component of every organization (as an economic unit). In order to best exploit an accounting system, expectations of a system must be specified and these should associate with long-term objectives of the organization to help it make best use of limited resources in order to achieve its goals. Data must be captured to satisfy the characteristics such as understandable, reliable, comparable, relative and just-in-time.

In conclusion, rather than imposing information technologies on organisations, like in the case of MoFPED, it would be more appropriate for the intended users to participate in their design and development. This would take into consideration the socio-economic context in which the new technologies would be applied, increasing the success chances.

Accounting information systems are critical to the production of quality accounting information on a timely basis and the communication of that information to the decision makers. The information value generated by AIS to shareholders and stakeholders in making decisions is invaluable. Financial managers need the financial and accounting data provided by AIS to evaluate the firm's past performance and to map future plans.

The appropriate AIS is a powerful tool for making good business decisions.

From the results of the statistical analysis, it can be deduced that the use of AIS which is a computer-based application brings a new trend of change from the conventional way of accounting to a computerized way which most people are not prepared for or find very difficult to adapt to. Hence, this emphasis on innovation adoption and diffusion initiatives should be focused on developing user attitudes that are conducive to effective utilization and acceptance behavior

No manager, although wise and smart, cannot make proper decisions without being aware of facts about tasks and operations of an organization. Those who make decision based on their own hypotheses and thoughts achieved unfavourable results and encountered financial and economic crises. These along with the need to precise and just-in-time information for planning, organizing, decision-making and controlling propose accounting, especially management accounting, as a desired information system and a staff department presenting proper information for different decisions.

Information networks aim to provide required information, exert required supervision and make the most appropriate decisions for survival, growth and development of an organization. Accounting is an information system through which managers have to collect proper and qualified data required for better decision-making from all official and unofficial channels. Hence it was necessary to examine proper and qualified data captured, presented and reported using AIS on improving managers' decisions.

MoFPED reported information to aid derive decision on how to formulate sound economic policies, maximise revenue mobilisation, ensure efficient allocation and accountability for public resources so as to ensure sustainable economic growth and development.

#### **5.4 Recommendations**

In reference to the conclusion the statement of problem, the objective of the study and the result of the findings, the following recommendations are made;

Accounting units should utilize the utmost benefit of related knowledge based on computer systems so that relevant financial reports to the informational needs to be understandable and reliable in the best possible way with the short span of time.

Management should pay utmost attention to the role of accounting information system in better understanding of financial dimensions of development as one of the important tools of decision making and planning.

The MoFPED should train Employees to improve knowledge about accounting information systems and financial analysis. Therefore, higher levels of formal education should be encouraged, alongside workshops, training and re-training of users for adequate improvement. In addition, further studies should be conducted to quantify the impact of AIS on accounting firms, in order to be able to establish its full potential.

Management should evaluate accounting policies adopted and should be revised according to the principal and standard for giving more useful accounting information systems in case of need.

Institutions should consult professional accountants when starting a business to learn about the various laws that affect them also to familiarize themselves with the variety of financial records that they will need to maintain.

Decision making should be administered in flexible and variable rigid adherences to accounting information, which are clearly appropriated for current conditions. This will cause the whole accounting system to gain credibility and effectiveness.

Co-ordination from the top management will ensure proper interpretation and implementation of the accounting information in decision making. Therefore, every personnel should know where he/she belongs in the entire organization and also see himself as part of the corporate whole. These individuals must take part in decision making process at least at the functional level.

### **5.5 Areas of Further Research**

In regard to results and recommendations, the following areas are put forward for future research:

- To analyse the effectiveness of AIS on financial performance of private companies,
- To establish the relationship between human resources competency and AIS efficiency among NGOs
- To examine the extent to which human resource accounting influences the design and utilization of AISs
- To assess the relationship between the quality of software and hardware and AIS efficiency
- To examine the Relationship between accounting information management and Organization Effectiveness.
- To examine the relationship between accounting information and employee's commitment.

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**APPENDIX I: QUESTIONNAIRE DEPARTMENTAL STAFF OF MINISTRY OF  
FINANCE PLANNING AND ECONOMIC DEVELOPMENT**

**Dear Respondent**

I am a student of Kyambogo University pursuing Master of Business Administration. I am collecting data for my dissertation. The main objective of the study is to investigate the effect of “*Accounting Information Systems and Decision Making Case Study of Ministry of Finance Planning and Economic Development*”. I assure you that the data will be strictly kept confidential and only used for academic purposes. To ensure anonymity, you are not supposed to write your name in the questionnaire.

Kindly spare **10-15** minutes to answer the questions and provide the valuable information following the directions in the questionnaire.

**SECTION A: BACKGROUND INFORMATION**

Bio-data	Options	Frequency(f)	Percentage (%)
a) Gender	Male		
	Female		
b) Age Bracket (years)	20-29 years		
	30 -39 yrs		
	40-49yrs		
	50yrs and above		
c) Education Level	Certificate and below		
	Diploma		
	Degree		
	Postgraduate and masters		
d) Designation	Top management		
	Middle level employee		
	Lower level employee		
e) Length of Service	1 -3year		
	4-6years		
	7years and above		
f) How often MoFPED provides AIS in data	Annually		
	Semi- Annually		
	Quarterly		
	Monthly		

P 07	Data presentation allows proper allocation of most scarce resources	1	2	3	4	5
P 08	financial reporting helps users who lack the ability to demand all the financial information they need from an entity	1	2	3	4	5

**SEC D: THE EFFECT OF DATA REPORTING ON DECISION MAKING AT THE MOFPED**

Which of the following statements explain “*The Effect of Data Reporting on Decision Making at the MOFPED*” Please indicate the extent to which you strongly disagree (1), disagree (2), Not sure (3), agree (4), strongly agree (5)

CODE	ITEMS	SCORES				
R 01	Financial reports are usually issued on a quarterly and annual basis to account to citizens for the use of resources	1	2	3	4	5
R 02	financial reports are publicly posted on the website	1	2	3	4	5
R 03	AIS data Reporting enhances Development Fund, how it is earned and the cost of earning it	1	2	3	4	5
R04	Time allowed for half year, quarterly and end of year reports is adequate	1	2	3	4	5
R 05	Adherence to applicable regulation is enhanced through reporting	1	2	3	4	5
R 06	Financial reporting helps the ministry to engage in effective decision-making concerning the strategic objectives and overall strategies of the Consolidated Revenue Fund(CRF)	1	2	3	4	5
R 07	The data disclosed in the reports help management discern the strengths and weaknesses on overall Statements of Revenue	1	2	3	4	5
R 08	Financial reporting provides vital information about the Statement of Recurrent Expenditure and activities of the ministry to its stakeholders	1	2	3	4	5
R 09	Reporting in a balance sheet is a snapshot of what the ministry owns and how it financed, through borrowing or owners' investments.	1	2	3	4	5

**SEC E: DECISION MAKING AT THE MOFPED**

Which of the following statements explain “*Decision Making at the MOFPED*” Please indicate the extent to which you strongly disagree (1), disagree (2), Not sure (3), agree (4), strongly agree (5)

CODE	Decision Making at the MOFPED	SCORES				
		1	2	3	4	5
R 01	The MoFPED undertakes decisions on payroll management in the public sector	1	2	3	4	5
R 02	The MoFPED decides on the public sector reforms that influence accountability	1	2	3	4	5
R 03	The MoFPED decides on the public sector reforms that influence accountability	1	2	3	4	5
R04	MOFPED uses AIS to address decentralized payroll management in the public sector	1	2	3	4	5
R 05	MoFPED undertakes decisions on supervision of privatization and parastatal reform program	1	2	3	4	5
R 06	Commitment Control System (CCS) to minimize excessive expenditure	1	2	3	4	5
R 07	Fiscal Decentralization Strategy using Electronic Funds Transfer (EFT)	1	2	3	4	5
R 08	Directorates at the ministry make strategic decisions based on AIS	1	2	3	4	5
R 09	Decisions on overall performance effectiveness are undertaken using AIS	1	2	3	4	5

*“Thanks Very Much for Your Co-Operation”*

## APPENDIX II: INTERVIEW GUIDE FOR THE HEADS OF DIRECTORATES

Dear Respondent,

I am a student of Kyambogo University pursuing Master of Business Administration. I am collecting data for my dissertation. The main objective of the study is to investigate the effect of “*Accounting Information Systems and Decision Making Case Study of Civil Aviation Authority*”. I assure you that the data will be strictly kept confidential and only used for academic purposes. To ensure anonymity, you are not supposed to write your name in the questionnaire.

1. What AIS are used at the MoFPED?
2. What kind of data is entered in the AIS at the MoFPED?
3. What is the relevance of accounting information systems at the MoFPED?
4. What is the effect of data entry on decision making at the MoFPED?
5. How often is data captured presented? And who are stakeholders it is presented to?
6. To what extent does data presentation influence decision making at the MoFPED?
7. What is the effect of data reporting on decision making at the MoFPED?
8. Which types of decisions are implemented at the MoFPED?
9. What is the relationship between AIS and decision making at the MoFPED?

**THANKS A LOT FOR YOUR CO-OPERATION**

### **APPENDIX III : STATEMENT OF INFORMED CONSENT**

The purpose of this research project is to examine the effects of changing Accounting Information Systems on user interaction. The areas that will be studied are attitudes toward change, prior knowledge of Accounting Information Systems, and personal experience driven responses. This research project is also being conducted in order for me to complete my Honor's Undergraduate Senior Thesis in the Business Department at the College at Brockport, SUNY.

In order to participate in this study, your informed consent is required. You are being asked to make a decision whether or not to participate in the project. If you want to participate in the project, and agree with the statements below, your completion of the survey signifies your consent. You may change your mind at any time and leave the study without penalty, even after the study has begun.

I understand that:

1. My participation is voluntary and I have the right to refuse to answer any questions.
2. My confidentiality is protected. My name will not be written on the survey. There will be no way to connect me to my written survey. If any publication results from this research, I would not be identified by name.
3. There will be no anticipated personal risks or benefits because of my participation in this project.
4. My participation involves reading a written survey of about 30 questions and answering those questions in writing, via selection of a multiple choice answer, or via Likert scale. It is estimated that it will take less than 15 minutes to complete the survey.
5. Approximately 150 people will take part in this study. The results will be used for the completion of an honor's undergraduate senior thesis by the primary researcher.
6. This project has been approved by The College at Brockport's Institutional Review Board. Approval of this project only signifies that the procedures adequately protect the rights and welfare of the participants. Please note that absolute confidentiality cannot be guaranteed due to the limited protections of Internet access.

I am 18 years of age or older. I have read and understand the above statements. All my questions about my participation in this study have been answered to my satisfaction. I agree to participate in the study realizing I may withdraw without penalty at any time during the survey process. Finishing the survey indicates my consent to participate.

**APPENDIX IV: TABLE FOR SAMPLE DETERMINATION**

Populati on size	Samp le size	Populati on size	Samp le size	Populati on size	Samp le size	Populati on size	Samp le size	Populati on size	Samp le size
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Krejcie, Robert V., Morgan, Daryle W., "Determining Sample Size for Research Activities", Educational and Psychological Measurement, 1970.